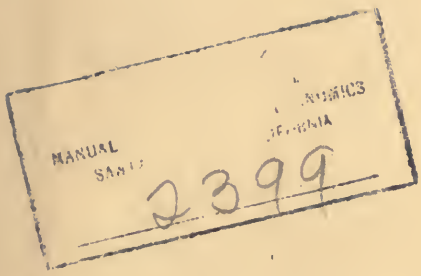
LIPPINCOTT'S
EDUCATIONAL GUIDES
EDITED BY W. F. RUSSELL, PH. D.

THRIFT AND CONSERVATION

ARTHUR H. CHAMBERLAIN
JAMES F. CHAMBERLAIN


MANUAL
2399

LIPPINCOTT'S EDUCATIONAL GUIDES

EDITED BY W. F. RUSSELL, PH.D.

DEAN, COLLEGE OF EDUCATION, UNIVERSITY OF IOWA

THRIFT AND CONSERVATION

BY ARTHUR H. CHAMBERLAIN

AND

JAMES F. CHAMBERLAIN

Lippincott's
School Educational Guides

EDITED BY W. F. RUSSELL, PH.D.
Dean, College of Education,
University of Iowa.

THRIFT AND CONSERVATION
How to Teach It.
BY ARTHUR H. CHAMBERLAIN
AND JAMES F. CHAMBERLAIN
272 pages. 9 full-page illus.—line cuts. $1.40 net.

BRIGHTNESS AND DULLNESS IN CHILDREN
BY HERBERT WOODROW
UNIVERSITY OF MINNESOTA
ILLUSTRATED

LIPPINCOTT'S EDUCATIONAL GUIDES
EDITED BY W. F. RUSSELL, A.B., PH.D.
DEAN, COLLEGE OF EDUCATION, UNIVERSITY OF IOWA

THRIFT AND CONSERVATION

HOW TO TEACH IT

BY

ARTHUR HENRY CHAMBERLAIN

EXECUTIVE SECRETARY CALIFORNIA COUNCIL OF EDUCATION; EDITOR SIERRA EDUCATIONAL NEWS; CHAIRMAN COMMITTEE ON THRIFT EDUCATION; NATIONAL COUNCIL OF EDUCATION; EDUCATIONAL DIRECTOR, AMERICAN SOCIETY FOR THRIFT

AND

JAMES FRANKLIN CHAMBERLAIN

HEAD, DEPARTMENT OF GEOGRAPHY, STATE NORMAL SCHOOL, LOS ANGELES; ASSOCIATE EDITOR JOURNAL OF GEOGRAPHY; FELLOW AMERICAN GEOGRAPHICAL SOCIETY; MEMBER ASSOCIATION AMERICAN GEOGRAPHERS; LECTURER AND WRITER ON CONSERVATION

PHILADELPHIA AND LONDON
J. B. LIPPINCOTT COMPANY

COPYRIGHT, 1919, BY J. B. LIPPINCOTT COMPANY

PRINTED BY J. B. LIPPINCOTT COMPANY
AT THE WASHINGTON SQUARE PRESS
PHILADELPHIA, U. S. A.

HG
7931
C5

LIBRARY
STATE NORMAL SCHOOL
MANUAL ARTS AND HOME ECONOMICS
SANTA BARBARA, CALIFORNIA
2399

To practice thrift in peace times is a virtue and brings great benefit to the individual at all times; with the desperate need of the civilized world today for materials and labor with which to end the war, the practice of individual thrift is a patriotic duty and a necessity.

WOODROW WILSON

BRY 123

JAN 23 1920

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/thriftconservati00chamiala

INTRODUCTION

DURING the few years past, and especially from the beginning of the great war, the term "thrift" has been much more in the public mind and on the public tongue than heretofore. Men and women are talking thrift and economy; children are writing essays on thrift and are earning and saving as never before. There are lectures and published plans and outlines telling how to earn and invest and save; how to avoid waste; how to make best use of time and talents and money; how to preserve and improve the health; how to conserve our natural resources of soil and water and forest, so that they may remain the inheritance of peoples for all time to come.

It has been the purpose of the authors to set forth in the present volume the needs for thrift teaching; the aims to be kept in mind, together with practical applications of the thrift principles to the life of the people, as made possible through class-room teaching. The causes leading up to the spendthrift practices of our people are set forth and the necessity for rational habits in proper saving and economy are made plain. Everywhere through the book, however, there is drawn the distinction as between true and false economy. Thrift does not consist in hoarding or in miserly practices. One does not save

in order to have simply, but in order to have that he may use wisely. He saves against the time of emergency, in his own life, and those dependent upon him, and that he may do his part in community or state through the channels of public or private service.

The coming of the war brought us face to face with realities the like of which we had not before experienced. Here was an object lesson of the necessity for thrift, offering channels for economic practices not before understood to exist. Food was needed at home and abroad. Everywhere the wastage in food was enormous. By the application of scientific principles, the practice of more intensive methods, the utilizing of the waste places and vacant lots and the cultivation of school and home gardens, there was marked increase in production. The tremendous wastes through the garbage can, the spoilage of fruits and vegetables, the loss in uneconomic handling of meat and fish and eggs—these have been largely stopped. False practices in overextravagant dress have been checked. Sound clothing is repaired where formerly it was cast aside, thus effecting a perceptible saving. Public sentiment, the selective draft and the "work or fight" slogan have brought into disfavor the all too universal practice of wasting of time.

So changed is the attitude of the public mind that where formerly the man of thrift and saving

tendencies was looked upon with something of contempt and pity, now the man who is not reasonably thrifty or economical is the object of more or less adverse criticism. It has at last become dignified to conserve instead of waste; to practice thrift rather than spend foolishly.

In money matters boys and girls everywhere, and without regard to the financial standing of the family, are encouraged to work and earn. These earnings are to be used when needed, not hoarded. Part of the earnings are to be saved or invested against the time when need or want may arrive. Nor are boys and girls more than men and women to so worship money that it shall be made and invested for its own sake. There must be a proper balance and division of income as between necessary living expenses, service for others, education, travel, recreation and the like, and permanent savings or investment. The savings and investments practiced by children are not primarily for the purpose of laying the foundation for wealth, but that there may be established the habit of thrift.

In the same way the conservation of natural resources is seen to be absolutely essential if the supply of nature's materials is to last and the cost to others than the most wealthy be less than prohibitive. These natural resources, furnishing fuel and power and light and comforts and necessities, are to be used and enjoyed, not wasted. They belong to us as fully as they belonged to those who came

before; and they are as truly the inheritance of coming generations as they are of the present.

Thrift and conservation then should be practiced by all. That there may be universal understanding of what thrift is—personal, community, national—the implications of thrift must be taught in the schools. This thought has been constantly in the minds of the members of the committee on thrift education since the beginning of the work some years since. The war helped materially in developing and focusing public opinion and sentiment. A study by members of normal and training classes in professional schools and colleges and by members of study and reading circles of the chapters herein presented, will, it is hoped, be the means of bringing to the children of the nation the lesson of thrift and the righteousness and dignity of saving and economy as opposed to the wrong and unwisdom of waste and extravagance.

Acknowledgment is made of the assistance given by members of the Committee on Thrift Education of the National Education Association; by the Y. M. C. A. and especially of Mr. Arthur M. East, Secretary of the Industrial Department and of the thrift committee of the Y. M. C. A., and by Dr. Richard G. Boone of the University of California. The great and sacrificing work done by Mr. S. W. Straus, president of the American Society for Thrift, is permeating the nation. Appreciation is here expressed for the inspiration and enthusiasm offered

constantly by Mr. Straus and for his unselfish devotion to the cause and his vision in insisting upon the school as the proper training ground for thrift teaching.

For illustrations we are especially indebted to the Y. M. C. A.; the Bureau of Forestry of the United States Department of Agriculture; the Bureau of Salvage and Shop, Pacific Division, American Red Cross; and the J. B. Lippincott Company.

That the book may help in the development of a thrifty and hence a happy and a prosperous nation is the hope of the authors.

May, 1919.

A. H. C.
J. F. C.

CONTENTS

CHAPTER		PAGE
	INTRODUCTION	7
I.	THRIFT AND THE NATIONAL LIFE	17
II.	SAVING AND FALSE ECONOMY	22
III.	SOURCES OF WASTE	36
IV.	FOOD; DRESS; TIME	44
V.	HUMAN RESOURCES	54
VI.	PROGRESS IN THRIFT	62
VII.	THE GROWTH OF THE CONSERVATION MOVEMENT	71
VIII.	RESOURCES HELD IN TRUST	80
IX.	CHANGED CONDITIONS; MUTUAL INTERDEPENDENCE	86
X.	IMPORTANT FOODSTUFFS	91
XI.	INCREASING THE FOOD SUPPLY	106
XII.	CONSERVING AND USING THE SOIL	117
XIII.	OUR WATER SUPPLY	127
XIV.	THE VALUE OF THE FORESTS	133
XV.	OUR MINERAL FUELS: COAL	143
XVI.	OUR MINERAL FUELS: OIL, GAS, GASOLINE	151
XVII.	THE IRON AGE	157
XVIII.	THRIFT AS APPLIED TO CLOTHING	165
XIX.	THE NATIONAL HEALTH	173
XX.	THE NATIONAL HEALTH, CONCLUDED	180
XXI.	TIME AS AN ASSET	190
XXII.	THE USE AND MISUSE OF MONEY	196
XXIII.	THE USE OF PUBLIC PROPERTY	206
XXIV.	APPENDIX	212

ILLUSTRATIONS

FIG.		PAGE
1.	An Implement Shed	40
2.	A One-armed Operator Working with a Typewriter	58
3.	With One Arm Gone This Soldier Has Been Refitted for Self-support	58
4.	Salvage Department, Alhambra, San Gabriel Chapter	64
5.	Salvage Station of the Fresno Chapter	66
6.	Utah Copper Company's Open Pit Mine, Bingham, Utah	74
7.	Agricultural Provinces in the United States	95
8.	School Garden	108
9.	How the Farm Is Destroyed Through Erosion	118
10.	Distribution of Forests	134
11.	On the Plains for Winter Grazing	168

THRIFT AND CONSERVATION

CHAPTER I

THRIFT AND THE NATIONAL LIFE

Americans a Prodigal People.—The need for Public School instruction in the principles of thrift education was never so great or apparent as at the present time. The Americans are a most prodigal people. Before the war, tendencies everywhere bordered on the spendthrift. Personal loss and wastage in time, money and energy, and the almost criminal neglect shown in our handling of the resources of nature, prove a source of wonder and comment to the observant of the entire world. Our great material wealth and tremendous possibilities for growth and development have made us careless and wasteful to a degree. We have almost unlimited resources in extent of territory, diversity of soil and climate and variety of production. With the farming industry properly developed and intensified, the soil of the United States would go far toward supplying three meals a day to the peoples of the world. Our supplies of mineral wealth used so lavishly have seemed inexhaustible, especially in the metals of common

use—iron, copper, tin, lead, gold, silver. With coal, gas and oil in supposed abundance, we have used these extravagantly. Our forests, widely and conveniently scattered, would, if care were substituted for criminal neglect and control for individual selfishness, be adequate for our use for all time to come. We have wonderful rivers to be used for navigation, for irrigation, for power; great lakes useful to commerce and for fisheries. There are extensive railway systems; cities and manufacturing plants that have sprung into existence as if by magic; industrial, social and economic institutions rivaled nowhere in the world.

Ours is a country of great extent, of tremendous possibilities, of beckoning opportunities. Herein lies the chief reason for our prodigality. Decade after decade has seen the curtain drawn back from our frontier. The Appalachians have given place to the country of the Ohio and the Great Lakes. The New South and the Mississippi Valley dissolved into the far western plains and the Rockies. And now the Pacific Coast, stretching from Alaska to Mexico, with an outlook to Siberia and Japan and China and the Philippines and the Hawaiian Islands, is indeed the front door of the nations of the world.

A Cosmopolitan Nation.—We are a *big* nation. Over 100,000,000 men, women and children, drawn from every civilized country on the globe, are here undergoing the process of becoming citizens of

America. Those who come to us from overseas bring with them manners and customs entirely foreign to those familiar to their next-door neighbor. Every language and literature has its exponents; every race, creed and temperament its representatives. These newcomers mingle with those of us who have tarried here only slightly longer than have they, and the impossible is accomplished. The entire mass is sifted and shaped and molded and adjusted so that living and working together is made possible.

In the ten years preceding the opening of the great war our country witnessed greater changes in its industrial, social and economic systems than those brought about by any previous half century period in its history. During these ten years we had been thinking and talking in terms of conservation, of efficiency, of preparedness. In actual practice we had been prodigal to a degree. Costly machines were " scrapped " before the *new* had been rubbed off them. Modern appliances, labor-saving devices, manufactured articles, furniture, automobiles, books, clothing, were sent to the dump heap before they had been paid for that place could be made for more modern and up-to-date affairs, purchased on credit. The war forced us to a somewhat changed attitude. But still waste goes on. Competition is keen. Desire for personal preferment and recognition is keener. The chase for the " almighty-dollar " is overshadowing. The sane too often is

cast aside for the superficial. Our concern now is for this great sensative period of reorganization and building that lies before us, in the years following the world war.

Need for Thrift Instruction.—Because of our great extent, our natural wealth in forest and sea and soil, our civil and educational institutions, and the ingenuity and energy of our people, as shown in undreamed of progress in the application of science to the arts and industries, we have become wasteful of our natural resources, imprudent of personal health, blind to the probable financial demands of the future. So much so indeed that nothing before our people to-day is of greater importance than is the matter of thrift instruction in the schools. A thrifty nation means a prosperous nation, an enduring nation. To educate a nation, you must educate her children; her future citizens. As are the children of to-day, so will be the nation of to-morrow. Our experiences in the war drafts proved conclusively the lack of training necessary to properly qualify our young men for the mental and physical battles of life. The principles of thrift instruction are of vastly greater import than is much of the grammar and algebra and history as now taught in the schools.

There lies on my desk a letter from a man out of a "job." He "can do anything"; is willing to turn his hand wherever it will bring him an honest penny. Educated in the schools, he has no more knowledge of business or the value of money than

has the young lad upon the street. His wife is in the hospital, his children are unshod, and he has not eaten a man's meal in three days. He does not claim that the world "owes him a living," but begs for an opportunity to make one for himself and family. He can juggle mathematical formulæ, speak several languages and criticise a work of art, but no one ever thought he would be called upon to apply the principles of thrift, so he was never required to study them.

The suggested changes in our mode of living and in our courses of study, which for three decades have had ample exponents in theory, are now for the first time finding practical application. Our participation in the war and the lessons taught in a concrete and severe way by the great conflict serve as an object lesson in bringing to light many weaknesses in our social fabric and in our schools. Thrift must be practiced by our people. Upon the schools is to be placed the responsibility of so training the rising generations and of shaping public opinion that thrift and economy shall be substituted for waste and extravagance.

CHAPTER II

SAVING AND FALSE ECONOMY

Saving Habit to be Encouraged: Money Values.—Aside and apart from thrift as applied to natural resources, the proper saving and use of money is of the utmost importance. Lack of knowledge of the real value of money and of how wisely to spend, save and invest rather than the small or inadequate salaries they receive is the cause of the meager financial circumstances in which many persons find themselves. Hosts of men and women are poverty stricken chiefly because of ignorance of money values. Every boy and every girl should early be taught the dignity of labor, the necessity for earning, and of saving a little regularly from the earnings. Proper thrift instruction should clearly demonstrate that these savings are made not with any selfish purpose as the animating motive but that the boy or girl may be now and later as man or woman better able to serve his fellows and himself.

"You can never be a real success until you have learned how to earn money. Look about and learn how others are doing it. Put your wits to work and scorn the idea that it is unmanly or unwomanly to work for money." It is not dignified to spend what you have not earned, and to waste is a crime.

Any one who has it can spend money lavishly if he so desires. It takes brains, patience and determina-

tion to make money honestly. "Economy," says Simon W. Straus, "begins with saving money, but

economy is a mere habit. Thrift is a virtue." And Lincoln said truly: "Teach economy—that is one of the first and highest virtues—it begins with saving money."

But to save money, it is first necessary to earn it. This means working for it. Boys and girls should early begin to earn. They should keep accurate account of their earnings and expenses. Through a simple bookkeeping process, every person should know exactly at any time his financial condition. There should be no guesswork. Just as a firm or business corporation must maintain a careful cost-finding system and a check upon outlay and income, so must the individual keep a personal account of his financial transactions. The place to begin this work is with the boy and girl in the home and in the school. This does not mean that every one who is systematic in this way will amass a fortune. Benjamin Franklin put it in these words: "The art of getting rich consists very much in thrift —all men are not equally qualified for getting money, but it is in the power of every one alike to practice this virtue."

Writing on "Economy" in the *Milwaukee Railway System Employes' Magazine* for May, 1918, Helga Schmidt-Hackstock says: "There is no habit compared to the habit of economy. For no matter how great a man's income is, he is doubly at a loss in case of a failure if he spends it all. He has nothing with which to meet an emergency and the number

of things he will have to forego will be greater than if he had heretofore practised a little economy. The man who saves and who is living within his income is always prepared for the rainy days. And, strange to say and strange as it may seem, the clouds do not seem to hang so close when one is prepared for them.

"When we say to practise economy we should not misconstrue it. It does not mean that we are to become miserly, or stingy—far from that. For instance, to give our earnings to beggars, who are not worthy, who would perhaps spend what we give them for things other than the necessities of life, is a wrong. Also we should contrive not to spend our hours or our earnings for things that we reap no benefit from, for there are amusements that can afford pleasure and which still are wholesome as well as educational.

"Every penny wasted is a direct injury to the community. Any degree of extravagance in dress or food is culpable. For instance, a wanton waste of coal must tend to impoverish a neighbor as well as one's self. Every ton unnecessarily consumed must lessen the supply and raise the price."

Every person should each week lay aside a portion of his earnings. But the mere process of laying aside a few dollars regularly does not necessarily make a thrifty person. Merely putting money in the savings bank will not make for thrift. It is the *habit* of saving which, if taught in the schools, will

pervade the home. There will thus be established not only a habit valuable personally but one that will serve as a wholesome example to others. The school should teach that it is not dignified but vulgar to squander money. It should at the same time teach that the thrifty man is not the one who hoards. It is he rather who saves and from his savings spends wisely. We must not confuse thrift with false economy.

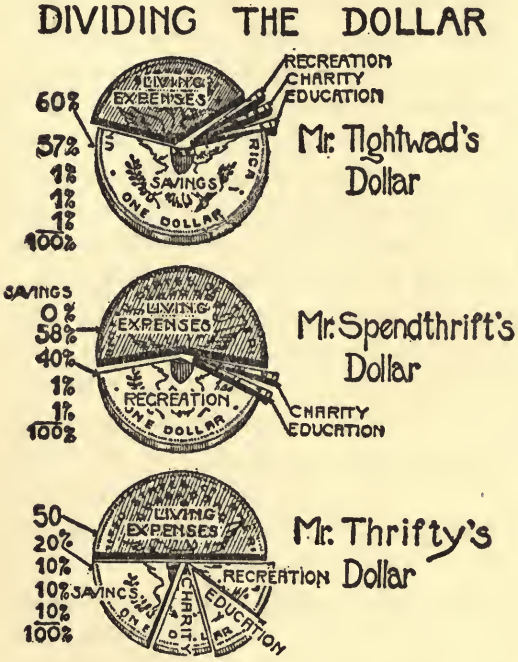
An excellent definition of thrift is that given by a school girl winning the prize offered in 1913 by the American Society for Thrift. "Thrift," she says, "is management of your affairs in such a manner that the value of your possessions is constantly increasing"; while David Starr Jordan defines thrift as "a determination to live with a margin for future advancement; to earn a little more than one spends or to spend a little less than one earns, getting meanwhile the value in strength, in satisfaction or in other worthy return for the money one feels free to spend."

False Economy.—It is necessary to understand clearly the distinction between one who economizes wisely and one who saves and hoards from motives purely mercenary. It is lack of economy indeed to read or study in a poorly lighted room simply that the electric light or gas bill may be cut down. Fuel should not be conserved to the detriment of comfort or health. Whether working with brain or muscle, nourishing food and sufficient of it must be taken,

and he who attempts to economize unduly in this direction will soon find his error. Soiled clothing worn to avoid laundry or tailor bills is not thrift. Nor is it ever good policy to purchase cheap, shoddy goods whether wearing apparel, furniture, home decorations, tools or utensils. Fruits or other foodstuffs that are not fresh are a most costly investment, however much reduced in price. The thrifty person studies well his needs and then purchases only those things that are of good quality and substantial. Superficial goods may serve the purpose for a short time. But, like the individual who lacks sincerity and dependableness, they soon have to be put aside. A substantial article when old and worn still shows its original worth and dignity. And it is usually false economy to purchase anything that is not to be used in the immediate future, even though of excellent quality, simply because of reduction in price. The interest figured on the investment is usually more than any saving over buying the article when needed at its current value.

Nor is it fair to judge a man who spends freely as one lacking in thrift. One who takes pleasure in books or pictures or works of art or music may well invest such sums, which, if so invested by another, would be waste and extravagance. To one who enjoys travel, money so spent may be a wise investment. A man with imperative obligations to meet could not so spend money. He would be doing an injustice to himself and to others as well. Standards

for thrift and economy are to be found not so much in the size of the check that is drawn in payment for a commodity as in the financial condition of the purchaser and the use he makes of his purchase.



Things bought for the pleasure or satisfaction or benefit of others may result in the truest economy, even though a so-called poor financial venture for the purchaser. True service to others results in personal thrift.

" The man who pays $50,000 for a work of art,

the product of the brain of a genius, and hangs it in his home or donates it to an art gallery is not thriftless or extravagant—although many would believe that the advocacy of thrift is against such practices. The man who pays $50,000 for a work of art places a glorious premium on genius and brains, giving impetus to artistic progress, refinement and civilization. In Chicago a man died recently and left $700,000 to the Orchestra Association of that city, to be used subsequently in the founding of a school for music the equal of any in the world. That man has given impetus to artistic development; he has exemplified the greater thrift. It is through such deeds as these that the world progresses. The man who is penurious and tight-fisted is a dead weight to civilization." [1]

False economy in little ways breeds the "penny wise and pound foolish" type of man. A man in his anxiety to catch a train dropped a five-cent piece at the entrance to the station gate. In endeavoring to retrieve the lost coin he missed his train and he so permitted his temper to get the best of him that he was incapacitated for work the entire day. The later train caused him to miss a most important business engagement and thus kept waiting several associates who likewise missed subsequent engagements. A telegram costing several times the worth of the nickel lost had to be sent to hold the meeting for his delayed arrival. Under the conditions this

[1] S. W. Straus, "The Greater Thrift."

man practiced poor economy. At another time and under changed circumstances this man would have been justified in saving not the five cents only but a penny even.

"The spirit of thrift," says Dr. Jordan, "is opposed to waste on the one hand and to recklessness on the other. It does not involve stinginess, which is an abuse of thrift, nor does it require that each item of savings should be a financial investment. The money that is spent in the education of one's self or of one's family, in travel, in music, in art, or in helpfulness to others, if it brings real returns in personal development or in a better understanding of the world we live in, is in accordance with the spirit of thrift."

Good business men, so-called, those who watch the little things and the leaks in their business, sometimes show poor judgment and practice false economy. An investment of $20,000 has been made. To bring best returns an additional $1000 is needed. The business man has this money but instead of applying it to his business he goes on year after year, running factory or plant or store at less than normal pressure, because of unwillingness to invest in improvements and betterments such as additional light or elevator service or filing devices or modern equipment or for necessary help or for those properly qualified. This false economy is frequently seen in unwillingness of employers to advance the salary of a workman or trusted employe until too late and a

better position beckons him away. The attitude of the public generally in its unwillingness to pay adequate salaries to teachers is a notable example of short-sightedness and lack of thrift. For while an injustice is practiced on the teachers, in the last analysis the pupils suffer most. Teachers cannot long afford to remain in the profession and must seek more lucrative employment. This constant change of teachers injures the school. Moreover, the false economy shown in the inadequate financing of the school may secure the teacher of partial training or result in classes sometimes double the size they should be. The money saved by this reduction in teaching force and number of school rooms is many times covered in loss to the State through extra cost of the "repeaters," or those pupils who are required to take a second or third year in the same grade. Many children who under proper conditions would go forward normally or would cover three grades in two years, now in crowded rooms and with little individual attention require three years to complete two grades of school. There is thus a tremendous wastage of money. The wastage of human material is much greater and cannot be measured.

It is false economy for a manager to require his clerks to constantly remain standing when at times they could as well be seated. And it is false economy for a teacher to remain standing the entire school session. By passing out to the class pencils, drawing materials or books when work should be in progress,

time is lost. This should be done before the class convenes or by the pupils themselves. The time of the teacher should not be devoted to such details. Some of the most valuable and abiding lessons for boys and girls come as the result of sharing responsibility in assisting in the regular school routine. It is not thrift to devote one minute unnecessarily to a particular member of a class of 30. This means not simply 60 seconds lost, but a half hour wasted.

Pay-As-You-Go.—We have just published an editorial under the caption Pay-As-You-Go, which reads:

"While the Government, the Schools, the American Society for Thrift and various organizations are using their utmost endeavors to inculcate in the national and individual mind the necessity for economy, a prominent city daily displays regularly the following advertisement:

Dress Well On Credit.
Women's and Men's Fall Styles.
—— Credit Co., —— St. (Advt.)

"This may be profitable to the newspaper and no doubt brings large volumes of business to the advertiser. We have a feeling, however, that there should be some authority to handle such matters. When the Government does not hesitate to condemn profiteering, and is justified in asking every one to help to the limit of capacity in conserving food and fuel, it should not permit self-seeking business houses to "pull the wool" over the eyes of young men and

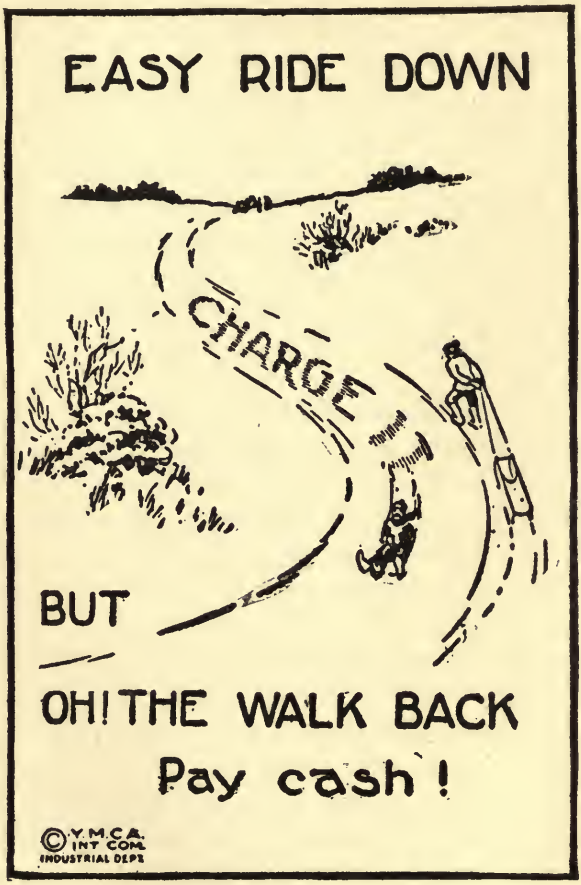
women working on small salaries by inducing them to mortgage their future by buying on credit. The practice is wrong." [2]

It is so easy to buy on credit and so difficult to meet indebtedness incurred. To pay for things that are used and no longer exist is a hardship indeed. It takes courage to deny ourselves the things we need in order to "keep up" with our neighbors. To incur indebtedness, however, without ample backing to meet the obligation is a dangerous precedent on which to conduct one's affairs. And while many fortunes are made by borrowing and in "gambling on futures," there are thousands who fail to one who succeeds.

The "installment plan," so much used by many in their business dealings, has under restricted conditions its advantages. Goods sold upon the installment plan are, however, listed at 10 per cent. to 20 per cent. higher than they are held in the open market. The merchant must have interest upon his investment. He must also be guarded against those who, after paying partially for an article, find they cannot see their way clear to pay the balance. Thus a second-hand product is returned to the merchant, and the amount paid by the original purchaser is virtually lost. Boys and girls should be warned against the practice of too great borrowing and the handicap they are under in having to pay interest. Impatience to develop a business rapidly

[2] Sierra Educational News.

results in extensive borrowing and frequently in failure. Patience to proceed slowly, determination to



lay aside ever so little even of the net earnings, and to be content with sure returns on a small but grow-

ing savings account and willingness to live cheerfully within the financial means in sight, are the surest guarantee of developing a sound business. Thus are Kings of Finance made.

As a secret of success Samuel Smiles points out that " comparatively few people can be rich, but most have it in their power to acquire by industry and economy sufficient to meet their personal wants. They may even become the possessors of savings sufficient to secure them against penury and poverty in their old age. It is not, however, the want of opportunity but the want of will that stands in the way of economy. Men may labor unceasingly with hand or head, but they cannot abstain from spending too freely and living too highly.

" The majority prefer the enjoyment of pleasure to the practice of self-denial. With the mass of men the animal is paramount. They often spend all that they earn. But it is not merely the working people who are spendthrifts. We hear of men who for years have been earning and spending thousands a year, who suddenly die, leaving their children penniless. Everybody knows of such cases. At their death the very furniture of the house they have lived in belongs to others. It is sold to pay their funeral expenses and the debts which they have incurred during their thriftless lifetime."

CHAPTER III

SOURCES OF WASTE

HABITS are easily made. They are broken with difficulty. It is so easy to go on doing the thing we have been doing, in the way we have been doing it. We waste time, waste energy, waste money, waste food, waste strength and temper and health until we become "so saturated with the spirit of waste that we actually resent being spoken to about it." A most common form of expression, "I didn't think," characterizes the all too prevalent condition in which we as busy people find ourselves. We take no account of the comparatively small amount of money or time or energy wasted by us as individuals. It is only when we are made conscious of the great combined waste that we begin to fully realize the seriousness of the situation.

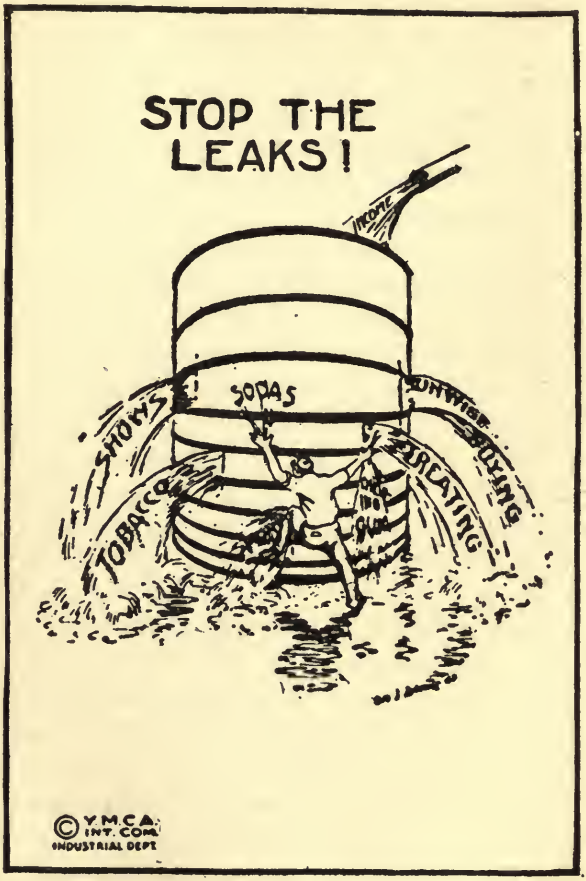
As indicating the sources of some of the most stupendous and far reaching wastes there is significance in the following table compiled by Doctor Eliot of Harvard. Note that some of the items listed are absolutely injurious to our national life; some are entirely non-essential, and others have value when purchased or used in moderation, or for legitimate business or pleasure.

Intoxicating Liquors	$2,200,000,000
Tobacco	1,200,000,000
Jewelry and Plate	800,000,000
Automobiles	500,000,000
Confectionery	200,000,000
Soft Drinks	120,000,000
Tea and Coffee	100,000,000
Millinery	90,000,000
Patent Medicines	80,000,000
Chewing Gum	13,000,000
Total (annual)	$5,303,000,000

If this vast amount of over five billions of dollars were divided equally among the entire population of the United States, there would be approximately $50 for every man, woman and child. The tremendous waste for liquors and tobacco not only tends to impoverish the nation, but unfits those who use them to excess for success in life. If in time of war the nations of the world find it necessary through governmental authority to prohibit the sale and use of intoxicants to the men in the fighting line, the same condition should exist in time of peace. During the football season the boys on the team are not permitted to use tobacco. It is a sad commentary that the necessity of keeping up to high water mark in pursuing the school studies and in engaging in the regular channels of business and of daily living is not thought so important as the game of football. The thrift practiced in the training season should be extended over the twelve months of the year.

To use a large cake of soap and destroy the

remainder when a small piece will do equally well; to leave the electric lights burning when no one is



in the room; to use large sheets of fine grade paper in school or home when small pads will meet every

requirement; to purchase unnecessary amounts of any commodity to the end that portions are permitted to spoil or be cast away; to spend in complete idleness, not in legitimate pleasure or recreation, minutes that run into hours and hours that equal days—these are habits that are wasteful in the extreme. "It is not the cost of a single piece of soap, a single hour of useless light, a single sheet of paper, a match, a cent or two that counts; it is the cumulative totals that make the astonishing losses."

There are in our great cities tremendous wastes in ways innumerable. There is waste in electricity for illumination and waste in gas for heat and for fuel. There is waste in water through carelessness and because of defective pipes. There is waste in lumber in the destruction of thousands of wooden crates and boxes, large and small; and waste in paper and cardboard in the same way. Materials of every description are sent to the dump heap—partially worn clothing, unused dishes, crockery, tinware and other utensils. Fruits, vegetables, meats, fish, eggs, bread and bakery goods have suffered waste well nigh impossible to compute, and this both in the shops and in the homes. Government action, forced by the immediate emergencies of the great war, assisted wonderfully in creating a proper attitude in this direction.

But in many ways the most extravagant waste is found in the country. In cities we have oversight, and departments and commissions to report

upon and improve conditions. Moreover, the city is the place of *consumption,* whereas the country is that of *production.* The country is the source of raw materials. The farmer or orchardist or dairyman or stockman gives scant attention to waste or spoilage because he "raises," as he says, many of his own foodstuffs. He "makes his living." Lack of system and careless handling and few labor-saving devices result in great loss.

"The farmers of the United States each year lose in the evaporation and decay of cornstalks a total of $200,000,000. The loss from unnecessary spoiled eggs amounts to $40,000,000. Of 35,000 cars of potatoes shipped from Maine the annual waste is 700,000 bushels. Home canning of vegetables usually wasted on our farms would save America $100,000,000 annually. How can we expect thrift from the children brought up on farms where there is such wanton waste?"

Leaky roofs permit rain or snow to ruin hay or grains. Tools, machinery, utensils, implements and vehicles of all kinds are allowed to stand in the sunshine in summer or under trees in winter, exposed to the elements. The wood portions are weathered and cracked and furnish a home for insects, and soon decay. Iron and steel rust and corrode. Animals are half housed; cows and chickens left without proper care or shelter, and as a result the quantity of milk and eggs is appreciably reduced. Fruit trees are neglected; fences down, permitting stock to

destroy crops; windows broken, causing unsightliness and extravagant use of fuel to warm the house; buildings left without paint. Lack of thrift in these and other ways means a high total loss to the country folk in dollars and cents—an amount impossible to estimate. It means as well a loss to the city which must depend upon the rural communities for many of the raw materials of food, clothing and shelter. More than ever are we to-day each dependent upon the other. Each individual, each community, each country owes a duty toward every other individual, community, country. Waste on the part of one means an injustice to others—to all.

The relation between using more than we need and of wasting more than we use, and the man power necessary to produce the commodity in question is one that will bear close study. It is not human nature to think, when using the article, of the labor and time and care and thought necessary in its production. Be it electricity, the book, the bread or the berries, the garment made from cotton or wool—through nature's long, careful processes, man's inventive genius, and labor's tired hands, has come the finished article from the raw product. And above all, man power is to-day as never before, to be conserved. Every hand is needed. Every one must do his part. Those who through carelessness make necessary additional man power add to the nation's burdens in time of war and time of peace as

well. How conserving man power makes for thrift is well illustrated in the following paragraphs.

"The final and best way of meeting the famine in man power is by avoiding the consumption of man power. We must first of all understand the problem. We must then build on that understanding a great national, spontaneous, voluntary movement in the direction of not using a pound or a yard of any commodity that is not absolutely necessary to well-being. We must first understand that every commodity we use is based on man power. We must understand that every minute an electric light is turned up is just that much consumption of man power in the power station, on the railroad that brought the coal to the station, and in the mine where the coal was dug. We must realize that man power is sorely needed. . . . We must understand that the same is true of everything we eat or wear. We must carry this thought with us every waking minute. It must be a purpose ever present and continuous. The achievement of it must be a point of pride. We must create a nation-wide rivalry in doing without.

"We must understand that the best patriot and the one who is most efficiently serving the nation is the one who achieves most in the direction of doing without."

"Those who are thrifty never fail entirely; they may not reach the heights, but they never will reach the depths." So says one who is himself an example

of a thrifty life. The argument sometimes made that we have not time to save, or repair, or take care of things is usually no argument at all. For the less time we have, the fewer dollars there are in our pocket, the greater our need to earn, furnish the strongest reasons possible for preventing all waste and for making the best use of what we have.

CHAPTER IV

FOOD; DRESS; TIME

Waste No Food.—The necessity for conservation in food was clearly shown by the great war. There has been waste in foodstuffs beyond ability to estimate.

Within a stone's throw of our desk there are great hotels and restaurants where, before food restrictions prevailed, there were wasted daily sufficient breads and foodstuffs to feed a regiment. Our waters yield fish in such quantities, taken simply for pleasure and allowed to waste, as would satisfy the needy of a city. Our economic system not only permits the sending out into life of men and women unprepared to grapple with everyday problems, but allows such reckless waste of the essentials as would be tolerated by no other people in the world.

The cost of the food used in this country each year is estimated at about $5,200,000,000. This is nearly equal to the total value of what the people waste through all sources. One-third perhaps of this entire amount of food is likewise wasted. "It seems," says an authority, "perfectly natural for some people to merely toy with a dinner, sending choice cuts of meats and fowl back to the garbage can. This food if consumed would feed all the poor.

It would build ten battleships. It would buy all the land in some states. It would pay off the national debt in a single year. It would run the Government for twelve months.

"The waste of money cures itself, for soon there is no more to waste. There comes a time when the bank runs dry and the easy money flows no more. But the frightful waste of food can go on year in and year out, and yet we wonder why living costs so high.

"It takes four years to raise a porterhouse steak, and to send half of it back to the kitchen is an economic crime. If you waste a forest soon the last tree will be cut down. If you waste land it will soon be barren. If you waste time you will never succeed. If you waste money you will soon have no more to waste; but you can keep on wasting food until you eat no more and wonder why you are poor. Better take inventory of what goes out in the garbage basket and see how much you contribute toward this enormous sum, so big in its proportion that you fail to grasp its magnitude." [1]

Not merely in hotels and restaurants or in the homes of the wealthy has this waste been taking place. Indeed, it is in the rural communities where frequently the greatest sources of waste are noticeable. The garbage pail and a false economic system have been persistently and surely robbing the future

[1] Thrift—Issued by the Educational Committee of the Chamber of Commerce, Philadelphia. Page 11.

of its food heritage. The school must teach how to increase the food supply; must lend itself in the present extremity to the making of gardens and the harvesting of crops. It must offer instruction in how rightly to conserve food, how to use left-overs, what constitutes a balanced ration, how to choose food substitutes. It must emphasize right eating and discourage overeating. Under-nourishment is caused more frequently by eating improper foods than by eating too little food. Proper thrift instruction dictates that every girl and every boy shall know how to plan and prepare a meal. Indeed, no boy or girl who cannot plan and cook a palatable meal can be said to have creditably completed the common school.

Moderation in Dress.—Pupils should be taught that it is vulgar and wasteful to be overlavish in dress and adornment. It is the common experience of high school teachers that one of their most troublesome problems is that of the dress of high school students. Even in the upper grammar grades boys and girls vie with each other in dress and adornment. It is not uncommon to see sons and daughters from the homes of the wealthy dress to-day for school as their parents dressed for ball or opera. It may be said that fully as great lack of judgment is ofttimes displayed by fathers and mothers of the less well-to-do classes in permitting or encouraging their sons and daughters to dress beyond their financial means. Any detrimental effect is shown not alone on the part of those students who can best afford this lavish

expenditure. In a democracy such as ours, where equality is presumed to prevail, the temptation is great for boys and girls coming from homes of modest or even meager circumstances, and who in school touch elbows with their fellows from homes of wealth, to desire to emulate them in dress. A father as a laboring man receives a wage sufficient to keep his family in humble circumstances. A mother as the sole support of her family has barely enough for the necessities of life. These parents, that their children may receive an education, are called upon for outlays far beyond their ability to meet. And if these boys and girls do not appear as well dressed as their fellows there are heartaches on the part of some and sneers on the part of others. Sacrifices are made in money, time, energy, health, that the natural pride of these boys and girls need not suffer. Thus all are injured, rich and poor alike.

It is these practices that bring on discontent and discord and that produce characters that are flabby rather than sound. Extravagance, whether in matters of dress, food, speech or social or physical behavior, whatsoever tends to develop traits of character through establishment of wrong habits, these are detrimental in the highest degree. It is the duty of the school so to direct the boys and girls that correct attitudes and habits of thrift be early established. And it is as well the duty of the home to practice thrift. "The root of all national saving is in the family."

Even boys and girls have a duty toward society and the home as well as toward themselves. With proper habits of moderation established, saving, both in outlay and in actual bank deposits, will make a normal appeal.

The Value of Time.—Thrift in use of time and the proper employment of the leisure hour is given all too little attention in the schools. Concentration of effort leads to accomplishment. The husbanding of energy, the conserving of reserve forces, economy in organization and in order of procedure—these have a place in the public school course in thrift.

The amount of time wasted and worse than wasted by the student in the school, the laborer in the shop, and the individual in the home is beyond all computation. This waste of time is brought about frequently through lack of any well-conceived plan of action. A "hit-and-miss" policy consumes time and energy and does not make for economy and thrift. What is ordinarily spoken of as *plan* or *system* is absolutely essential to the securing of results without waste of time. "Hours spent in useless pursuits or waste moments unimproved are as truly wasted as if one would empty his purse into the sea or throw good food into the gutter. If we could add together the unoccupied moments they would make a very large space, which we should feel ashamed to spend idly. However, rest is truly a vast difference from idleness. Let it not be construed that physical rest is a waste; in fact, it is truly

great economy, as it restores exhausted strength."

A habit of doing nothing, of dawdling, of standing on the street corners, of moping in school, of sneaking away from the bench in the shop, of gossiping, idling, persistent and regular card playing, of perpetual play of any sort, soon has a reactionary effect upon the individual and upon those with whom he comes in contact. Those who habitually waste time soon become indolent and lazy. In the final analysis our criminal classes are recruited in no small degree from the ranks of the habitual time-wasters.

"The boy who spends two hours each evening lounging idly on the street corner wastes in a year 730 precious hours, or more than 80 working days a year, which, if applied to study, would familiarize him with the rudiments of almost any of the familiar sciences. If, in addition to wasting an hour or two each evening in just loafing, he spends a dime for a smoke, which is usually the case, the amount that is more than wasted would pay for one or more of the leading periodicals each month, or would purchase the nucleus of a good students' library."

Lack of occupation on the part of those wealthy youth of the country who waste their time is fully as detrimental as such waste on the part of the laboring classes. With them squandering of money and of health and character go hand in hand with the squandering of time.

Many men shirk while on duty. The man who

would succeed must interest himself in his employer's business. He must recognize that the latter's inter-

est is his own. The laborer or clerk or salesman who watches the clock only to drop his tools and

run when the whistle sounds, and who appears at the office door on the stroke of the hour and not a moment to spare—such a man or woman is not likely to succeed. We quote from a popular current magazine [2] a letter written by a workman in one of the shipyards engaged in Government work. Admitting that the illustration may be extreme in its viewpoint, this signed letter is significant and offers food for reflection.

"Here are some things he would have seen," says the correspondent in speaking of the experiences that would have met an open-minded visitor to the shipyard: "75 per cent. of the men doing 50 per cent. of a fair day's work, losing thereby to the country at least $3000 per day on *one single ship*. He would have heard the foremen tell their men: 'Now take it easy and hang on to this.' He would have heard at every turn men boasting about how little they have done and what a pay check they received. You may ask how do I know all these things. Because I am one of the chief offenders. I am working or rather stalling in a large shipyard. The last time I asked a foreman what to do next, he said: 'For —— sake can't you find a place to hide?' I did. I have been in the lazaret for three days, receiving $9.90 a day, and haven't done one single tap of work."

A man of our acquaintance recently left a splendidly paying job of similar kind because he could no

[2] *Collier's* for Sept., 1918.

JAN 23 1920 B+ 7 123
LIBRARY
STATE NORMAL SCHOOL
MANUAL ARTS AND HOME ECONOMICS
SANTA BARBARA, CALIFORNIA
2399

longer permit himself to draw a large salary and be constantly placed in the position of shirking, of pretending to be at work when even his superiors knew he was shamming. Indeed, did some people actually work as hard at an honorable task as they do to shirk a duty they would be the embodiment of the thrift idea.

It is not necessarily the so-called busy man who uses his time to the best advantage. Some people "fuss" over their work. They are always *busy*. They never have time to attend to anything save detail or routine. They go nervously from one thing to another. Such people usually complain of the amount of work they have to do. More often it is the person who appears to have time to devote to other things, who does not worry or get excited, who concentrates upon the task in hand, who uses his time to the best advantage,—such is the person who accomplishes most.

"There is economy in power. Sometimes we see a locomotive at a station going backward and forward with a great commotion, creating a great expense in steam and noise. There are men just like that. They go about their work with a great deal of excitement and soon exhaust their strength; they break down, not so much from work as from wasting their powers."

Play and pleasure must have their part in the thrift program equally with work and concentration. There must be relaxation from the regular duties.

Organized play for young people is fully as important as organized work. Play and recreation must be given full attention in home and in school. And the worker in the mill and the mine, the clerk in the shop, the merchant, the professional man, those in public places, men and women everywhere are too prone to neglect proper pleasures and change of occupation and scene and permit the play spirit to rust out. The more severe the task at which we are regularly employed, the more responsible, the more trying, the more need have we for play, recreation and wholesome entertainment.

The war did much to bring to all of us an appreciation of the value of time. The vacation periods of the boys and girls are now used by them to decidedly good advantage. They are working in gardens and orchards and on farms, they are helping in shops and offices, they are collecting waste materials, they are doing work for the Red Cross and selling Thrift Stamps. The street "loafer" is being missed from his accustomed corner and the "tramp" and "hobo" are learning that universal registration is finding them something to do. Whether in helping to win the war or in helping to make it impossible for the world to engage in another war, we are learning the lesson that industry rather than idleness is the surest road to thrift and success.

CHAPTER V

HUMAN RESOURCES

Physical Fitness.—We have long understood that the sound mind could do its best work only in the sound body. Within recent years attention has been given in schools and colleges to the physical life of the student. The effect upon the community is decidedly marked. The windows in schoolrooms are, in modern buildings, so arranged that there are no crosslights; fresh air and plenty of it is provided for those who are at the desks; proper temperature is maintained. Care is exercised that nourishing food be taken and that there be no overindulgence in the use of tea or coffee, and intoxicating and spirituous liquors or stimulants and tobacco should not be indulged in. Proper sleep and abundant physical exercise and play are known to be necessary if the body is to grow strong and keep well. Sanitary conditions must be of the best.

But these ideal conditions exist only here and there and in some of the best school systems. As shown by the army drafts, many of our young men were lacking in those elements that go to make up a good physique. Instead of a broad chest and sound lungs there were the stooping shoulders and narrow chest; eyesight was defective, hearing impaired.

There were soft muscles and sometimes indecision, lack of initiative and inability to concentrate or to give or obey commands.

During the war period we maintained in France, and at tremendous expense, recreational and physical education centers that our fighting men might be kept in perfect trim. More attention must be given both in and out of our schools to proper exercise for body-building and development. Clothing that is over heavy must not be worn indoors and tight clothing must always be avoided. Tobacco and intoxicating liquors, so injurious to the growing boy particularly, must not be used. Plenty of activity out-of-doors and sufficient sleep with fresh air in abundance are essentials to health.

The entire field of health and body betterment have a thrift setting and significance difficult to estimate. Health and sanitation; proper heating, lighting, ventilating; sleeping, eating and drinking; working and playing are to be emphasized as matters for scrutiny in any satisfactory thrift course. Temperance should be practiced in all things.

Increased Capacity.—Abnormal or subnormal children are to-day given large attention in the schools. The atypical child furnishes a problem to which the best educational thought of the day is directed. The backward child, if placed in a special class and under individual instruction or such teaching as is needed at the particular time, soon may be fully abreast of his fellows or in advance of them.

There are in the aggregate many deformed and crippled children. These if compelled to find their way unaided with others of their own age or mental capacity are sadly handicapped. They must have proper care and hospital treatment, be helped to and from classes and shielded from the more rigorous physical games and exercises while gaining strength and confidence. Special attention is to be given the food they eat that their bodies be properly nourished.

The milk supply in cities is, under modern methods of inspection and the adoption of sanitary regulations at the farms and dairies, resulting in lessening the death-rate among children. Summer camps, public parks and play grounds, municipal swimming tanks, excursions organized by public-spirited and philanthropic individuals, and the clinics, hospitals, dispensaries and foundations established in recent years are effecting a saving in human lives such as a few years ago was unthinkable.

Of public schools for crippled children there are a number. Classes are maintained in numerous cities, notably in Baltimore, Chicago, Cleveland, Detroit, New York, and Philadelphia. Here is going forward the work of building boys and girls that are crippled or deformed into men and women who will be self-supporting, self-respecting members of society. Under other conditions they would prove a charge on the state, and in many instances where they now develop normal bodies, without this care they would remain crippled or would soon succumb to disease.

"In past ages feeble or defective children were so much mere human wastage to be thrown on the scrap heap. Two thousand years ago the Spartans deliberately put to death children who seemed to be below the physical grade demanded by the code of that fiercely militaristic nation—abandoned them to the tender mercy of the storms and wild beasts in some rocky glen of the mountains. To-day we conserve this human material. The declining figures of infant mortality show vividly our care for the less robust members of the race. Our schools for backward children, our asylums, our charitable homes take the human material that would have been thrown away as worthless a few centuries or even a few decades ago, and eventually turn the feeble, the backward, the subnormal child into a good citizen." [1]

Rehabilitation.—Again the war had its great lessons. England, France, Italy, Canada, the allied countries generally, began early to prepare for the proper care and training for useful occupations of those men who should return from the front unable to take up their former vocations. Following our Civil War there were many men who, because of loss of leg or arm or owing to other serious injury, were a direct tax either upon the State or family members. Under these conditions the men lost spirit, relied upon others and in numerous instances their self-respect gave way. This kind of thing means not only a tremendous human sacrifice; it means as well

[1] S. W. Straus, "The Greater Thrift."

that there is lost to the nation the talents and genius of some of the best thought of the world.

Canada, in her work of re-education or rehabilitation of returned disabled soldiers, early performed a service that commended itself to humanity. Following her example our own country, first at Washington and later in various cities, established rehabilitation camps and hospitals. Those suffering from shell shock must undergo medical treatment. They must have their minds properly employed. Convalescents who have suffered serious wounds or have lost one or more limbs must be kept busy. Muscles must be employed in so-called "bed-side occupations"—weaving of rugs, making of baskets, drawing of designs, etc.

Men who have suffered the loss of arm or leg may, after being studied carefully by vocational guidance experts and after consulting their own interests and abilities, be given work in a line entirely new to them. In a few weeks or months some of these men are not only self-supporting but are able to claim a wage larger than they received in their original occupation before injury.

Character Training.—The moral phases of development, the work of character-building have a definite relation to thrift. "Specific work," says Doctor Snedden, "must be done in moral education, whereas the task laid by the public upon the schools of to-day is chiefly that of teaching reading, spelling and the common branches in an orderly manner."

FIG. 2.—A ONE-ARMED OPERATOR WORKING WITH A TYPEWRITER

FIG. 3.—WITH ONE ARM GONE THIS SOLDIER HAS BEEN REFITTED FOR SELF-SUPPORT

That character is absolutely essential to success is a commonplace. The teacher, however, who presumes to make headway with her pupils by *preaching* or by *moralizing* to them is doomed to disappointment. We now generally understand the fallacy of holding up to the class for emulation the spotless character of the Father of his Country, with the admonition that he who likewise finds it impossible to tell a lie is well on his way to the Presidential chair. Boys and girls should read the lives of successful men and women, and may readily be led to appreciate those characteristics that made success possible. They will know that not financial standing chiefly, but determination, honesty, loyalty to cause and country, adherence to principle, conscience, bravery to stand alone for the right as well as physical bravery, willingness to serve others—these are found in the strong character and in the truly successful man or woman.

And in dealing with boys and girls, or men and women, it is this common, every-day type of rugged honesty that we should expect in deed and in word. Cheating, the covering up of mistakes or errors, placing blame upon others, lying, tale bearing, complaining—these may be made subservient to right thinking, honest dealing, straightforward action and real helpfulness on the part of all.

President Nicholas Murray Butler has this to say:

"We hear much, and rightly, of the conserva-

tion of our material resources, of coal, of food, of labor; but should we not, and more especially in a great country like this, take some note of the need to conserve our spiritual resources? Are we not at a time in the world's history where we may perhaps be suffering from intellectual, moral and spiritual exhaustion? Where are the world's great poets? What voice is singing the song of idealism to the world as it was sung fifty years ago? Where are our great idealistic philosophers? Who are they who are guiding the world as it was guided not so long ago in paths of intellectual and moral and spiritual construction? May it not be that in fastening our attention upon the satisfactions of life we have turned our attention away from its purposes? May it not be that in our eagerness to weigh and to measure and to count we have turned our faces away from the true standards of value? And may it not be that behind all this immeasurable suffering, this incalculable loss, this perfectly appalling sacrifice, there is some good concealed? May it not be that out of it all our world—your world and mine—is going to learn new lessons and see more clearly than for a generation past the enduring standards and the full significance of the moral and spiritual forces? This contest has restored to the whole world the practical power of Faith. We are fighting because we have faith in a principle, in a tradition, in an ideal. Suddenly all our zeal for material gain cools

and slackens. All our accumulations are mobilized and hastened to the post where they will best serve." [2]

It is thrift in its broader and more human aspects that, when developed into habit, makes for character. In speaking of this "Broader Thrift," Mr. S. W. Straus says:

"Thrift means so much more than merely saving money—it means personal efficiency—it means plans—it means self-control—it means foresight—it means prudence—it means sane and legitimate self-confidence—it means all that makes for character. It is as much removed from miserliness on the one hand as it is from extravagance on the other. As we build the ideals of thrift we build character."

It strengthens one to compel oneself to do the distasteful, the disagreeable, but nevertheless the necessary thing. The practice of the "soft pedagogy" does not build strong mental and moral fiber. Character is developed through struggle and determination and sacrifice. "Thrift is submission to discipline, self-imposed. Thrift is denying oneself present pleasures for future gain. Thrift is the exercise of the will, the development of moral stamina, the steadfast refusal to yield to temptation."

[2] "Faith and the War." Address at war dinner, April 10, 1918.

CHAPTER VI

PROGRESS IN THRIFT

Thrift of National Leaders.—Thrift is the foundation of all great careers. History and biography prove this. It is shown in the lives of George Washington, of Benjamin Franklin, of Abraham Lincoln, of Peter Cooper. To understand the part played by thrift in producing men of purpose and of power we have but to study the lives of Jefferson, Jackson, Garfield, McKinley, Theodore Roosevelt. We have living examples in such characters as Woodrow Wilson, William H. Taft, Andrew Carnegie, Jane Addams, Simon W. Straus, Thomas A. Edison, Luther Burbank; and a host of others attest to the fact. Sooner or later those who forge to the front and who hold their places there must learn and practice the gospel of thrift.

"The best way to find out the true meaning of the word thrift and the results of thrift when diligently practiced is to consider the lives of successful men. Almost without exception they preached and practiced thrift in every form. It is worth while listening to what they have to say and to follow their examples. And it is quite surprising what small beginnings these men made and how extremely thrifty and saving they were. Nothing was too

insignificant to be carefully laid aside for future use, such as string from bundles that John Wanamaker, the Philadelphia merchant, saved to be used again and the old newspapers which he carefully smoothed out to wrap around packages that required no better wrapping. Most young business men of to-day would regard the saving of such items as beneath them—yet John Wanamaker has amassed a great fortune, has done a great amount of good in the world, and one reason that he is so much extolled and quoted to-day is that he practiced just such habits of thrift."

A statement made recently by Mrs. Charles M. Schwab was to the effect that during the thirty-five years of her married life she had regularly each month placed a portion of her income and allowances in her personal savings account.

We need more men in the public service who, like Franklin K. Lane, Secretary of the Interior, will champion the cause of public thrift and conservation. In a report to Congress, which should be read by every high school boy and girl, he says: "Petroleum is a priceless resource, for it can never be replaced. It has taken the ages for nature to distill it in her subterranean laboratory. We do not even know her process. It is practically the one lubricant of the world to-day. Not a railroad wheel turns without its way being smoothed by it. The great turbines move on bearings that are smothered in petroleum. From it we get the quick-exploding gas

which is to the motor and the airship what air is to the human body. Therefore, to waste it is a crime. How much of it there is in the United States no one knows. An estimate of twenty-three billion barrels has been made, but this country alone is consuming over one-fourth of a billion barrels each year. Not a barrel of it should be used for lubricating purposes until every drop of kerosene, gasoline and other invaluable constituents have been extracted." [1]

Men and women there have been who have practiced the gospel of thrift, and who, during their entire lifetime, were most generous toward the world. Benjamin Franklin left no greater legacy than a life record of application, of adherence to duty, of saving something from his daily earnings, of desire for human service; James J. Hill, starting penniless, carved from the Northwest an empire and a fortune. His habit of thrift has been an inspiration to many.

"Success in individuals or in nations demands outlook and vision." "We in this country," says *Collier's,* "are such optimists that we are too liable to regard prosperity at its height as a permanent thing and count upon a good income for future years, when all logic and history teach us that depressions constantly recur. Now is the time for all of us individually to prepare out of the material prosperity at hand for the years which are sure to follow, when business will slacken and incomes drop, and in some cases almost cease. History teaches us beyond any

[1] Annual Report, Secretary of the Interior, 1915, page 14.

FIG. 4.—SALVAGE DEPARTMENT, ALHAMBRA, SAN GABRIEL CHAPTER, COLLECTING FIVE TONS OF PAPER. (FROM THE BUREAU OF SALVAGE AND SHOPS, A. A. C., PACIFIC DIVISION)

question that thousands of families break up and go down into poverty because nothing has been saved to carry them over a slack period."

Salvage Efforts.—In all schools the country over effort is made to teach economy. Help was given in prosecuting the war through the collection of waste materials. Old papers, magazines, iron, lead, copper, tinfoil, bottles, containers of all sorts, stamps and various other materials are collected by school children. Unused garden plots have been brought under cultivation, discarded clothing is renovated and repaired, problems in arithmetic have been given a thrift setting through application to the food supply, preparation and use. The work of the Junior Red Cross and of War-Savings Societies has shown that the school's part in financing the war was beyond our most far-reaching surmise. All this is but a suggestion of the possibilities for thrift instruction in our public schools.

"Conserving waste material is now becoming a paying field in this country. A recent report shows that the value of old iron and steel re-used amounts to millions of dollars annually. The United States Geological Survey reports that the value of secondary metals recovered reached a total in 1914 of $57,039,706. 'Secondary' metals are recovered from scrap metal, sweepings, etc. Recovered secondary copper (including brass) in 1914 amounted to 127,882 tons, being over 22 per cent. of the primary copper smelted in the United States from

domestic ores during the year. The secondary lead recovered was equal to 11 per cent. of the primary refined lead produced in the country. The amount of secondary zinc recovered in 1914 was equal to over 20 per cent. of the production of primary zinc during the year."

There was observed recently near the entrance to a fine rural high school a number of boxes filled with bottles of all sorts and sizes and colors. Inquiry disclosed the fact that during the morning period the members of the classes representing a certain school year had been throughout the neighborhood collecting these bottles. Shops and homes had been visited and dumping grounds raked over. A contest was on in the school, the various school years vying one with another in a collecting contest. Thus interest was added to economy. The money value of the bottles was less than the actual value of the habits resulting from the work. In one of the largest Normal Schools in the country one of the main halls has along one side a long row of boxes, each bearing a label of the material to be deposited there: magazines, papers, copper, tinfoil, Red Cross supplies and the like. These students on leaving the school will see that like lessons in thrift come to the pupils under their charge.

Thrift in the Schools.—The public school course in thrift must show that personal thrift should be developed into community thrift, and this again into national thrift. And in the new order we shall

FIG. 5.—SALVAGE STATION OF THE FRESNO CHAPTER, SHOWING THE CO-OPERATION OF FIREMEN. (FROM THE BUREAU OF SALVAGE AND SHOP, A. R. C., PACIFIC DIVISION)

have international interests and hence an international thrift. Neither individual nor community should be niggardly in dealing with other individuals or communities. A thrifty man or a thrifty nation is not the one who hoards. True thrift may imply large expenditure. The thrifty boy and the thrifty man will establish habits of proper earning and saving and investing; will economize time and energy; will husband physical forces and guard the health; will practice conservation both of human and natural resources; will learn concentration of powers to the accomplishment of the most of which he is capable.

"Any virtue that is carried to extremes becomes undesirable and no longer a virtue. The thrift that does not make a man charitable sours into avarice. Thrift means better homes, better citizens, more comforts, more enjoyments, little waste, little anxiety —peace. Out of it grows productive energy, steady courage, independence, self-respect, aimfulness in life, manhood. It is the one material habit that has no shady side. It is acquired little by little—a steady pressure (in the right direction) until it becomes second nature to save and thrift becomes a habit."

Beginnings in Thrift.—Regular courses in thrift instruction have as yet been introduced in but few schools. It seems wise that thrift be taught through its application to other school studies and activities. Arithmetic, history, biography, geography, domestic economy, household art, the industries, agriculture,

health and hygiene, etc., may be used as valuable avenues for thrift instruction. Already a start has been made. Through the work of the American Society for Thrift and the Thrift Committee of the National Council of Education there have been carried to successful completion Thrift Essay Contests in the schools. In various school systems there have been special school contests and the writing of essays on thrift. In New York City the American Society for Thrift has established auxiliary societies in the schools. The club members agree to become depositors in the school savings bank, to give public entertainments on thrift, and to report regularly to the parent organization. This work will go forward rapidly in the schools.

Training for the Future.—"Are we wasteful of food, of clothing, of time and of money? If we are, then we are not thrifty, for thrift means just the opposite of waste." The war cost in money more for its conduct during a single day than is spent in education for an entire year. Care must be exercised lest the lessons taught to-day at such great cost be forgotten now when the war is over. We must not slip back into the former ways of doing things. The collective use of money for the collective good is a lesson we are beginning to learn.

The winning of the war by the allies was accompanied by the learning of some severe lessons by the United States. Our disposition to waste rather than conserve has, through lack of proper teaching in the

schools, been a sad handicap, and one which it will take time to overcome. The slogan "work or fight" put many unemployed idle members of society into the class of producers, and producers they must remain. In this great period of reconstruction the United States will, through proper training in her schools, be in position to lead forward to industrial liberty, to civil freedom, to educational emancipation. If we assume and hold our place as a virile, fearless, aggressive, sympathetic leader it will be because we have learned among other virtues the value of thrift in developing character and in shaping American ideals. These lessons the public schools must teach.

TOPICS FOR STUDY

Chapters I–VI Inclusive

Did you hear complaints at the necessity for the practice of thrift and economy during war time? What would you say to a person who would thus complain to you?

Recall how you earned your first money and write a 200-word story on the incident.

Make a list of the five chief sources of waste in your home; in school; in the business with which you are most familiar.

What is your most economical trait; your most wasteful one? Debate with your friend the question of true and false economy as set forth in the incident on page 29.

Study the successful business men of your acquaintance and ascertain their attitude toward purchasing on credit.

We speak of desirable traits such as thrift and conservation being developed by the war. Is it possible for good to result from such a calamity? Discuss fully.

Make a list of the men and women who have achieved national distinction by practicing one or another phase of thrift. Who are the nation's chief conservationists? What animals teach us thrift and conservation?

The shoemaker and harnessmaker have long used bits of material that to you seemed to possess no value. Name other trades or professions where this is true.

REFERENCES

"Agricultural Preparedness and Food Conservation: A Study in Thrift." Bulletin of Committee on Thrift Education, National Education Association, 1917.

"Financing the War Through Thrift; Reconstruction and Conservation." Bulletin of Committee on Thrift Education, National Education Association, 1918.

KIRKPATRICK, EDWIN A.: "The Use of Money."

National Education Association Proceedings, 1915–16–17–18.

PRITCHARD, MYRON, and TURKINGTON, GRACE A.: "Stories of Thrift for Young Americans."

SANDERS, THOMAS E.: "Saving and Investing Money."

SMILES, SAMUEL: "Thrift."

"Thrift"—N. E. A. Monograph; Essays on Thrift in American Thrift Society Contest.

Thrift—Monthly Magazine, 221 West 41st St., N. Y.—H. R. Daniel, Editor.

STRAUS, S. W.: Published Papers and Addresses.

CHAPTER VII

THE GROWTH OF THE CONSERVATION MOVEMENT

General Statement.—Among the qualities with which we as a people have been credited are extravagance, lavishness, wastefulness. It has been frequently stated that what the average American family *wastes* would *support* a family of the same size in Europe. To such an extent has the habit of wastefulness laid hold upon us that a person of saving, economical, thrifty disposition has been regarded somewhat unfavorably. The tendency has been to speak of such a person as close or stingy.

With the opening of the World War the American people underwent a transformation. To-day the person who is not saving and talking saving is the object of suspicion. He is regarded as being unpatriotic, un-American and a slacker. More has been done for conservation and thrift during the war period than during the last 200 years previous to this period. We are teaching thrift and conservation in the school and practicing it in the home, factory, the mercantile institution.

We now have a national Food Administration with branch organizations in every state and city. We have a national Fuel Administration with its

branch organizations. The sale and consumption of food and fuel are under federal regulation. Rich and poor, old and young, coöperate with the Government and vie with one another in saving everything that can be put to a useful purpose.

For two centuries we have been complacently facing a rapid growth in population, a steady increase, both actual and relative, in the consumption of our resources and a consequent decrease in these. The awful conditions imposed by war, a war upon the result of which depended the very civilization of the world, was required to bring about an earnest, effective, nation-wide campaign for conservation and thrift.

Among the chief agencies resulting in winning the war, conservation and thrift hold high rank. We are beginning to appreciate the tremendous importance of this work and the obligation which rests upon the teachers. The work of the teacher is not only to bring about an immediate saving, but to develop the *habit* of saving. The development of this habit means the development of a newer and a larger patriotism.

It is quite natural that we were slow to lay hold upon conservation in this country. A child whose every material need is supplied and who sees proofs of plenty all about him will not be likely to husband his supplies. We, as the children of Nature, have reveled in her riches and have seen no occasion for guarding these riches or for limiting our use of them.

Vast Natural Resources of the United States: Fertile Soil.—For many generations the countries of western Europe have been relatively densely populated. As a result, the land is high in price and great numbers of persons are landless.

The conditions attaching to the securing of ownership of land in the United States have been very easy. The immigrant tenant of to-day becomes the land owner of to-morrow. This abundance of cheap and fertile soil has led to extravagant and wasteful methods in agriculture.

Favorable Climate.—In a large part of the United States the climatic conditions are favorable to agriculture. The extensive area east of the one hundredth meridian receives a plentiful rainfall varying from 20 inches to more than 60 inches annually. Generally speaking, a precipitation amounting to 20 inches yearly is sufficient for successful agriculture without irrigation. Throughout this region the seasonal distribution is fairly uniform, and this is another advantage.

Our extensive semi-arid belt is in large measure unproductive, yet in the aggregate it produces crops and animals totaling an enormous value annually. The western mountains, trending athwart the course of the prevailing winds, cause heavy precipitation upon their western slope. Great rivers have their sources in these mountains, and under favorable conditions their waters can be stored and led out upon the thirsty lands, both east and west of the moun-

tains. This condition naturally delayed a land famine.

As our country stretches through about 24 degrees of latitude there is a wide variation in temperature conditions in different sections. Thus we have climatic conditions adapted to the growing of cotton, sugar-cane, rice, corn, wheat, oats and many other valuable crops. Our frontage upon the two great oceans serves to modify our temperature conditions. This is especially true of the Pacific Slope. There is no large area where the winter conditions are long enough or severe enough to be a serious hindrance to human progress, while the frequent weather changes due to the succession of the high and low pressure areas serve as a decided tonic. These climatic conditions favoring the production of large and varied crops, and serving as a decided stimulus to human endeavor, have coöperated with soil conditions in leading to the development of a prosperous agricultural population to whom the thought of the need for conservation has, until the present, made little appeal.

Extensive Forests.—For a long time after the first settlement by white men in this country, forests covered most of the area east of the Mississippi River. Before farms could be established the land had to be cleared, the process being a very slow and laborious one. Owing to the apparently inexhaustible supply of timber, people were lavish in its use and of course saw no reason for conservation. It is

FIG. 6.—UTAH COPPER COMPANY'S OPEN PIT MINE, BINGHAM, UTAH. THIS MOUNTAIN IS COPPER ORE

only during recent years that we have come to believe that our forest resource was in danger of exhaustion.

Mineral Wealth.—No other country in the world is so richly endowed with mineral wealth as is ours. The minerals are of great variety and they are widely distributed. We have enormous deposits of coal, both anthracite and bituminous, in most cases located near large centers of population and within easy reach of transportation facilities. Of petroleum and natural gas we have great quantities. Our supply of iron is large and many of the deposits are located close to coal and limestone. The Lake Superior deposits are easy to work and are very cheaply transported by means of the Great Lakes. Copper, lead, zinc, gold, silver and building stones are widely distributed. Our mineral wealth has expanded industry, led to the construction of lines of transportation and encouraged the investment of much capital, but has not developed the thought of conservation.

The Water Resource.—Our country abounds in streams, some of them of great size. In many of our streams there is an enormous amount of water power. The amount of power at a given point depends upon the volume of the falling water and the distance it falls. In early days some water power was used in grinding grist and in sawing lumber. To-day the use of primary water power in this country, although important, is decreasing and the development and application of hydro-electric energy is rapidly taking its place.

With such stores of wood, coal, petroleum and gas to be used as fuel little thought has been given to retaining in the hands of the public the ownership of our water powers. The increased demand upon our fuel supplies has at last shown us the need of this.

In our semi-arid sections great volumes of water run to waste during the rainy season, while during the dry season the lack of water is keenly felt. This waste should not be permitted to continue. More and more flood waters should be impounded and placed upon the lands as needed.

Our Growth in Population.—In connection with the vast and varied resources of our country we must now consider the part played by our rapidly increasing population in promoting the growth of the movement for conservation. For about 200 years after the first European settlements occurred, our population was very largely confined to the Atlantic Coastal Plain. The settlers were hunters, trappers, traders, lumbermen, fishermen, farmers. They were, to a much larger extent than are we, economically independent. Their industries were chiefly of the household type and supplied most of their simple wants.

The steady influx of people from the Old World led to the westward expansion across the Appalachian Barrier. Our population, which in 1800 was but 4,000,000, has increased to more than 100,000,000 at the present time. This rapid increase in population was a response to cheap land, fertile soil,

favorable climate, abundant forests, mineral wealth, water power, high wages, social equality, religious freedom, and other favorable conditions.

Some of the results of this rapid increase in population have been the practical exhaustion of cheap land, a remarkable extension of industries, multiplication of our exports and a constantly increasing use and waste of our national resources. These conditions slowly forced to the attention of the few the necessity of taking steps looking toward guarding our material wealth and providing for later generations, who, like ourselves, must draw their sustenance from nature's stores.

The first movement for national conservation was set on foot by the work of The American Association for the Advancement of Science and The National Academy of Sciences. The work of these organizations called attention to the need of conserving our forests and led to the creation of national forests. In 1908 Theodore Roosevelt, then President of the United States, issued a call for a meeting of the Governors of the States. At this meeting conservation was presented and discussed in a very comprehensive manner. Many of the states appointed conservation commissioners. Considerable public land, both national and state, was withdrawn from the market pending a more careful survey for the purpose of ascertaining its real value.

No small part of the interest aroused by this movement had been lost previous to the opening of

the World War in 1914. We continued to use extravagantly and to look upon waste in a more or less complacent fashion. We occasionally reminded ourselves that we led the world in the production of wheat, corn, oats, meats, dairy products, cotton, coal, petroleum, iron, copper, and other important commodities. We not only had sufficient of these things to meet all of our home demands, but we exported large amounts as well.

Such was the situation on August 1st, 1914, when Germany declared war against Russia. It very soon became evident that we should be called upon to furnish our allies with unprecedented quantities of the raw materials of commerce. The seriousness of the situation constantly increased. With millions of men serving in the armies and navies of our allies, and other millions taken from the productive occupations and devoting their entire time to the manufacture of war materials, our domestic problems multiplied.

Throughout the war there was a tremendous increase in our exportation of wheat, barley, rye, oats, meats, iron, steel and copper. More and more the truth has been forced upon us that the most imperative need is for food. Guns, ships, shells, armies there must be, but forces without food avail nothing. And now in times of peace it is this country that must furnish not only the bulk of the food, but tremendous quantities of other raw materials as well.

Careful investigation as to available and potential supplies in this and in other food-exporting countries showed that we could not possibly supply the materials which our allies needed if the war were to be successfully prosecuted, unless nation-wide attention were given to conservation. Thus necessity and governmental control forced upon us the conservation movement.

This saving of food does not mean that anyone in our country is to be deprived of needed food. There is and will be food enough to meet all real needs. All that we are asked to do, and all that it is necessary to do, is to prevent waste and refrain from needless use. It is the small individual saving, multiplied by 100,000,000, that will produce the desired results.

CHAPTER VIII

RESOURCES HELD IN TRUST

No story is more wonderful than that of the ascent of man from savagery to civilization. By what means has he made this progress? All of the riches of nature were spread before man thousands of years ago just as they are to-day. Primitive man used the gifts of nature just as, or much as, they were presented to him; but little by little he learned how to adapt these gifts to his needs. The superiority of the human being over other animals is largely due to man's flexibility, adaptability, and to his shaping of conditions to his immediate needs.

In spite of man's ability he is absolutely dependent upon what nature has placed before him. He can change but he cannot create the riches or the forces of nature. Since man has always lived by means of the resources which nature has placed at his disposal, and since apparently he must continue to rely upon them, it is of the utmost importance that these resources be wisely used.

Individual Conservation.—In the humid parts of the tropical zone nature is, as a rule, very lavish of her riches. There are fruits, nuts and berries to be had for the picking at all times of the year. Because of climatic conditions little attention need be given

to clothing or shelter. Man's environment in the tropics does not suggest saving, hence the natives are as a rule improvident.

Dwellers in the temperate zone learned that there is each year a season during which nature does not provide food. Experience and necessity taught these people that during the productive period of the year they must save and store food to be used during the non-productive period. They learned that warmer clothing and better shelter were needed during the winter than during the summer, and they made provision for these.

Mankind also learned that if life is sufficiently prolonged each individual finally experiences a period during which he is incapable of supplying himself with the necessities of life. Here is another reason for individual saving. At any time of life sickness or accident are liable to befall one and provision should be made for such contingencies. Individual conservation is largely actuated by a selfish, yet justifiable motive—that of insuring personal comfort and preserving life.

National Conservation: the Riches of Nature Belong to the Human Race.—It is the right of each member of society to live and to live happily. In order that he may do this he must be permitted to use from the vast stores of nature that which his life and comfort require. It is just as important that those who are to follow us should have this privilege as it is that we should have it. This being true we

cannot in the highest sense say that an individual has the right to do as he will with soil, forest, water, minerals.

The Riches of Nature.—The resources upon which the happiness, and, in fact, the very life of man depends, are ours to *use* but not to *waste*. The people of all generations are the rightful heirs of nature. We therefore hold these resources in trust, and it is our duty to guard our trust faithfully and to pass it on as little impaired by our use of it as possible. Failure to do this will cause great suffering to later generations.

Conservation then becomes a *national* as well as an *individual* duty. One may say: "Why should I be taxed for the reclamation of this arid land; I shall derive no benefit from it? Why should I help defray the expense of reforesting these mountains; I shall have passed away before the trees are ready to cut?" This represents the egoistic motive—the motive that considers self only. In order to bequeath to coming generations that which belongs to them we must adopt the *altruistic* motive. Our national duty can be performed only as each member of society performs his individual duty.

Definition of Conservation.—As the human family increases in numbers there is a constantly increasing drain upon the resources of nature. This drain is further increased by the fact that we now make use of these resources in many more ways than was formerly the case. Thus there is an increased per

capita use. This has been slowly opening our eyes to the fact that we must exercise greater care in the use of the resources of nature.

Conservation and saving are not necessarily the same. What appears to be saving is in some cases wasting. The old saying, " Penny-wise and pound-foolish," has many applications. The man who denies himself and his family the comforts of life in order that he may amass a fortune is not a conservationist; he is a miser. The man who would aid in conserving the nation's food and fuel supply by failing to provide for his family needed food and warmth is not conserving; he is wasting. *Conservation is use without waste.* It is use with the needs of both the present and the future in mind.

Thrift Adds Production to Conservation.—Use of our principal without waste, whether that principal be a natural resource, money, time, or health, is conservation. So using our principal as to cause it to increase is thrift. Conservation applied to our forests will prolong their life for many years. Thrift dictates that we plant both trees and seeds, thus adding, at least relatively, to our capital.

A farmer may have a capital of a few thousand dollars, the result of years of saving. As life is uncertain he feels that he should conserve this resource, drawing upon it to supply the necessities of life only. Thrift would mean using a part of this small capital in the purchase of fertilizer, better seed, improved machinery, or in helping his children

to secure an education. By so doing he would be providing for an increase in capital both for himself and for his children.

Conservation and Education.—Now that the world conflict has come to an end, there ends also the *immediate* need for conservation. Shall we then return to our old-time, wasteful habits of life? It is imperative that this movement become permanent, for if we are to continue to have a healthy and vigorous national development, conservation must become a national habit.

Our only hope lies in education. The seed must be sown in the public school and the plant nourished and sustained until it becomes self-perpetuating. In the best sense conservation is not a subject having a definite content as have arithmetic and physiology; it is an attitude of mind, a trait of character, which must be *lived* rather than *learned.*

The school has a wonderful opportunity and a great duty thrust upon it, and it must seize upon the one and faithfully discharge the other. Daily life within the schoolroom offers countless ways of practicing conservation in the use of school materials and of connecting this with life outside of school.

Every teacher who works faithfully to inculcate in children the habit of conservation, every child and every adult who practices the cardinal principle of conservation—*use without waste*—is doing his or her part toward solving our present problems and toward passing on the heritage which we hold in trust.

TOPICS FOR STUDY

Chapters VII and VIII

Give definite proofs that we are a wasteful people.

Why have thrift and conservation developed so slowly in the United States?

When and how will thrift become one of our national characteristics?

What are the advantages and disadvantages of national direction of our food and fuel and transportation facilities? Should Government supervision be extended?

In what ways has the work of the school helped to increase the production of such crops as corn or cotton?

Are people to-day more or less independent of their neighbors and of those in other localities than was the case formerly? Discuss fully.

We speak of man as having subdued nature. In what sense is this true?

Do so-called favorable climatic and soil conditions add to the possibilities of man's development? What of those nations that were once prosperous and that have long since decayed?

REFERENCES

Declaration of Governors for Conservation of Natural Resources. Government Printing Office, 1908. Farmers' Bulletin 340.

Goldrich, Leon W.: "Conservation of Natural Resources Through Education." Addresses and Proceedings National Education Association, 1916, p. 722.

Gregory, Mary Houston: "Checking the Waste," 1911.

Pinchot, Gifford: "The Fight for Conservation," 1910.

Richardson, Anna Steese: "Adventures in Thrift," 1916.

Stuart, M. H.: "Thrift in Its Relation to Conservation." Addresses and Proceedings National Education Association, 1916, p. 215.

Straus, S. W.: "Thrift—An Educational Necessity." *Ibid.*, 1916, p. 196.

Van Hise, Charles: "The Conservation of Natural Resources in the United States," 1910.

CHAPTER IX

CHANGED CONDITIONS AND MUTUAL INTERDEPENDENCE

Food, clothing, shelter, transportation are the fundamental physical necessities of mankind. In temperate climates, and especially among simple peoples, neither clothing nor shelter are as important factors as they are in more rigorous climates and where society has developed complex conditions. Even transportation in many of its modern phases is, aside from the part it plays in the solution of the food problem for cities, more of a convenience than a necessity.

Have you ever stopped to think that the food supply of the millions of people in our cities depends very largely upon the work of men, women and children who live in the country? Those who dwell in cities *produce* very little food, yet they must have a daily supply if they are to live and do their work.

Material Growth and Interdependence.—The food problem itself is daily becoming more complex. From an agricultural people in the beginning we are rapidly developing into an industrial, a commercial people. From a nation of rural communities, widely scattered farms, and distances great, with individual demands easily met, we find ourselves to-day with a large part of our over 100,000,000

people compacted into cities and towns. These people must be fed. Where once each family or group was self-sustaining, and for the most part independent of each other family or group, we are to-day largely dependent one upon the other. In early times, and even to-day in certain countries, all the processes of converting the raw material of food or clothing into the finished product were carried on in the home. At the present time with us, specialization has been developed to such an extreme that a shoe which once was made in the home must now, from the tanning of the hide to the turning out of the completed article, pass through the hands of 60 experts. The making of bread, which from the raising of the grain to the baking of the loaf was the work of each family at first, has now become a matter so intricate and complicated that the farmer may buy back the flour from his original wheat after it has been transported half way across the continent.

To those who live in farming areas the food problem is not as a rule a serious matter. These people produce a large part of what they eat. Under normal conditions there is nothing to separate them from the source of supply. A strike, a shortage of cars, a blizzard, a flood, may work a serious hardship to many who live in cities. The country is the source of all the raw materials of the food supply.

Obstruct for the period of a week the channels through which food in its raw state reaches the great centers of population, and famine, disease and death will result. And because the producers of these raw

foodstuffs are in their turn dependent in such great degree upon the manufacturing and industrial plants to return to them in converted form, and ready for use, the products of the soil, it is apparent that the producer and the manufacturer are necessary, the one to the other, and that food and transportation are in the final analysis closely identified.

Our economic system, in many ways unjust, has placed the producer at a disadvantage, and in isolated districts at the mercy of the middleman, represented by organization and capital. As a result, the producer has not been able to reap just financial rewards from his labor. This, however, has not brought foodstuffs to the consumer at the price which he should be expected to pay.

Just as many individuals depend upon others for their daily food, so some nations depend very largely upon others for a food supply. The people of overpopulated and highly industrial countries are always close to starvation. So little margin have the people of China and India that a partial failure of crops is usually followed by famine. The inhabitants of the British Isles depend largely upon the outside world for food, and they carry a surplus sufficient for a short time only.

Wasteful Tendencies Emphasized by War.—All too late we are suffering a rude awakening. Long ago certain European countries began to adopt a policy of intensive agricultural production, of elimination of waste, and of using the by-products. A French family will subsist with comfort upon the

product of a patch of ground we would consider too small for a kitchen garden. The substantial meal of the Russian or Italian peasant could well be made from the waste of the average table in our country.

From every large hotel in the land many tons of bread were annually, before the war, thrown away and fruits, vegetables, meats and table foods of all kinds were allowed to go to the garbage can in such quantities as would feed the needy of a city. Ice, coal, gas, oil, timber and those resources that affect directly or indirectly the food supply were ruthlessly wasted or so controlled by capital or by transportation agencies as to make their use almost prohibitive by the very poor.

The conditions outlined, bad enough in so-called normal times, are to-day aggravated many fold. With the most important powers of Europe at war there came an unusual drain upon the food products of those countries. During the war period the food resources were severely taxed. Lands were devastated, crops destroyed, agriculture neglected. Men of the farms were called into the conflict. As a result it is to this country that Europe looked and is now looking for much of her food supply.

With the entrance of our own country into the war matters took on a much more serious aspect. Our storehouses were soon depleted. Throughout the nation there is seen the need for intensive farming, sufficient farm labor at the time when it is required to save the crop, facilities for moving and marketing crops, and the elimination of waste in the

preparation and use of foods. We are faced with the prospect of having to become the granary, not alone of our own country, but in good part of that of European countries. It is to be hoped that, little by little, our people will come to realize that real preparedness lies fully as much in increasing and conserving our food supply as in activity in some other directions.

Temperature, precipitation, soil and surface are the physical factors controlling the production of food. There are large areas where the temperature is not high enough for a sufficient length of time to make agriculture possible. Upon millions of square miles there is so little precipitation that crops cannot be grown without irrigation. In some areas the soil contains so much alkali as to prevent the growth of most plants. In regions of very rugged topography, farming, if carried on at all, must be performed by hand, hence on a small scale.

It is evident that our food problem is at all times a vital one. Most of us are in action much of the time and food is necessary to supply the needed energy. The harder we work the more food or fuel is required. As a result of the expenditure of this energy there is waste of material and we must have food to replenish the waste. During the individual's early years of life growth is rapid. Growth is not possible unless the material necessary for growth is supplied. Food is this material. There are thus three reasons why we must have food supplied at frequent intervals.

CHAPTER X

IMPORTANT FOODSTUFFS

Kinds of Food.—The human body consists of the same elements that are found in plants. As all of our food is derived directly or indirectly from plants, this would naturally be the case. Our bodies consist of proteins, fats, carbohydrates, mineral matter, and water. These are the elements that must be supplied in the form of food. Although it is possible to live upon a vegetable diet, most people use both animal and plant foods. The former are richer in protein and poorer in carbohydrates than are the latter.

The oxidation of protein within the body produces both heat and muscular energy. This form of food is therefore needed for growth and repair. Protein is supplied abundantly by meat, eggs, milk, cheese, oatmeal, nuts, beans and peas.

Fats are of great importance because they supply energy, and when converted into body fats they help to keep us warm. This is the reason for the eating of much fat by the people who live in cold climates. Butter, oils, pork, cheese, nuts, cocoa and chocolate yield large supplies of fats.

From the carbohydrates, or sugars and starches, energy and body fats are obtained. There are various ways in which the body is supplied with

sugar. From such foods as bread, milk, potatoes and fruits we derive starch. After being taken into the body the starch is changed into sugar. We get sugar from vegetables, fruits and milk and we use it directly as a food.

A certain amount of mineral matter is necessary to the welfare of the body. Most of our food contains some mineral substance. Salt, calcium and iron are among the minerals most needed. Salt gives a flavor to our food and is a necessity as well. The calcium is built into the bones and the teeth and the iron is used in making the red corpuscles of the blood.

Water forms a very large part of our food. About two-thirds of one's body by weight is made up of water. In the removal of waste from the body, water is a very important factor.

The following tables give the composition of a few of our articles of food:

Milk	
Protein	3.3 per cent.
Fat	4.0 per cent.
Carbohydrates	5.0 per cent.
Ash	0.7 per cent.
Water	87.0 per cent.
	100.0

Yolk of Egg	
Protein	16.1 per cent.
Fat	33.3 per cent.
Ash	1.1 per cent.
Water	49.5 per cent.
	100.0

Beef Steak	
Protein	18.6 per cent.
Fat	18.5 per cent.
Ash	1.0 per cent.
Water	61.9 per cent.
	100.0

Cod Fish	
Protein	15.8 per cent.
Fat	0.4 per cent.
Ash	1.2 per cent.
Water	82.6 per cent.
	100.0

Butter	
Protein	1.0 per cent.
Fat	85.0 per cent.
Ash	3.0 per cent.
Water	11.0 per cent.
	100.0

White Bread	
Protein	9.2 per cent.
Fat	1.3 per cent.
Ash	1.1 per cent.
Carbohydrates	53.1 per cent.
Water	35.3 per cent.
	100.0

Corn	
Protein	10.0 per cent.
Fat	4.3 per cent.
Carbohydrates	73.4 per cent.
Ash	1.5 per cent.
Water	10.8 per cent.
	100.0

Potatoes	
Protein	2.2 per cent.
Fat	0.1 per cent.
Carbohydrates	18.4 per cent.
Ash	1.0 per cent.
Water	78.3 per cent.
	100.0

Rice	
Protein	7.8 per cent.
Fat	0.4 per cent.
Carbohydrates	79.0 per cent.
Ash	0.4 per cent.
Water	12.4 per cent.
	100.0

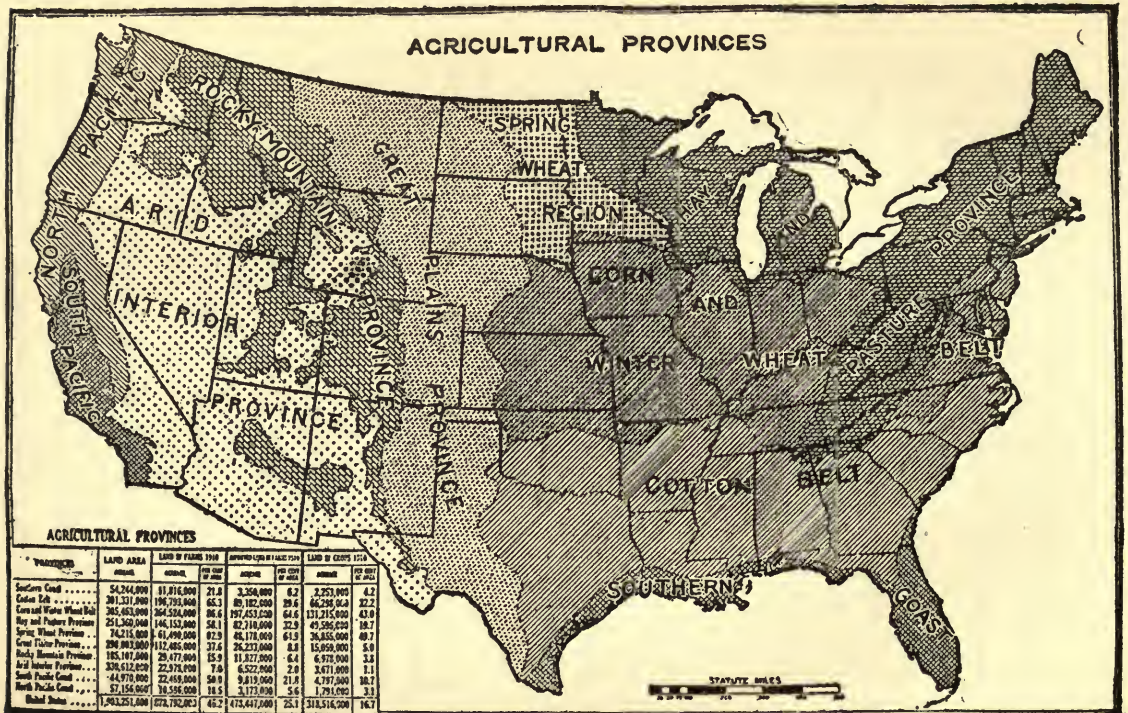
Bananas	
Protein	1.3 per cent.
Fat	0.6 per cent.
Carbohydrates	22.0 per cent.
Ash	0.8 per cent.
Water	75.3 per cent.
	100.0

Food and the War.—A new experience has come to the people of the United States. For the first time in the history of this nation our government directed the sale and the consumption of food. We no longer had the privilege of buying and using what we pleased. The most significant thing about this nation-wide movement to conserve food is that we are saving for others more particularly than for ourselves. We are asked to refrain from waste and to use substitutes for certain foods, not to deny ourselves needed nourishment.

From ocean to ocean every one in our country is working to produce or to save food. The wealthy and the poor are equally interested. Millions of school children are doing their part to help increase our food supply. In some countries the food shortage is a serious matter.

We are expected to contribute extensively to the general cause, because ours is a land great in area, much of which has fertile soil and favorable climate. We have more land under cultivation than have the people of any other country with the possible exception of China. Our comparative acreage of tilled land is high, being about 3⅛ acres per capita. From our farms and grazing lands we derive a surplus of nearly all of the fundamental foods. So rich are we in the necessities of life that our extravagant use and even waste have attracted the attention of the people of other lands.

The war revealed to us the need for immediate conservation. It has become the duty of every American citizen to save food. It has been shown that population increases more rapidly than does food supply. Some believe that by the year 2000 the population of the United States will be 500,000,000. How is the food for such a population to be provided? We must develop national habits of conservation and thrift. The success of this movement depends upon you and me. It is the small saving which each of us can easily make, multiplied by 100,000,000, that will insure an abundance for all.



AGRICULTURAL PROVINCES

PROVINCES	LAND AREA (Acres)	LAND IN FARMS 1910 (Acres)	PER CENT OF AREA	IMPROVED LAND IN FARMS 1910 (Acres)	PER CENT OF AREA	LAND IN CROPS 1910 (Acres)	PER CENT OF AREA
Southern Coast	54,244,000	11,816,000	21.8	3,360,000	6.2	2,253,000	4.2
Cotton Belt	301,331,000	196,793,000	65.3	89,182,000	29.6	66,296,000	22.2
Corn and Winter Wheat Belt	365,463,000	264,536,000	86.6	197,453,000	64.6	131,215,000	43.0
Hay and Pasture Province	251,360,000	146,152,000	58.1	82,210,000	32.9	49,586,000	19.7
Spring Wheat Province	74,215,000	61,490,000	82.9	48,178,000	64.3	36,855,000	49.7
Great Plains Province	298,903,000	112,485,000	37.6	26,233,000	8.8	15,050,000	5.0
Rocky Mountain Province	185,107,000	29,477,000	15.9	11,827,000	6.4	6,978,000	3.8
Arid Interior Province	339,612,000	22,378,000	7.0	6,522,000	2.0	3,671,000	1.1
South Pacific Coast	44,970,000	22,468,000	50.0	9,819,000	21.8	4,787,000	10.7
North Pacific Coast	57,156,000	10,506,000	18.5	3,173,000	5.6	1,791,000	3.1
United States	1,903,251,000	878,782,000	46.2	473,447,000	25.1	318,516,000	16.7

FIG. 7.—AGRICULTURAL PROVINCES IN THE UNITED STATES

Production of Wheat.—Wheat furnishes to a large part of the population of the world the staple article of food. In the average home in this and in many other countries it is served with every meal. Wheat bread contains all of the essential nutrients, and it is therefore highly fortunate that wheat has a wide range for growth.

Wheat is not at all a sure crop in areas having an annual precipitation of less than 15 inches or more than 45 inches if the temperature be high, as this latter combination leads to fungus growth. In the early period of its growth cool and rather moist weather conditions favor wheat, but later dry, hot weather is the best.

The United States and Russia are the two greatest wheat-producing countries, each being credited with practically 20 per cent. of the world's crop. Our yield of wheat per acre is quite unsatisfactory, being only about fifteen bushels as against thirty-two bushels in the United Kingdom.

Until quite recently, owing to our enormous output and our relatively small population, wheat was one of our leading exports. For the decade ending with 1903 our average annual exportation of this cereal amounted to 32 per cent. of our entire crop. For the decade ending ten years later the average was but 16 per cent.

Conservation of Wheat.—We can conserve wheat in a number of ways, one of which is through the substitution of corn. This cereal is richer in both

protein and fats than is wheat, but it is not so rich in carbohydrates. We produce about 70 per cent. of all of the corn grown in the world, and as corn is bulky and does not keep well, we should use it and export more wheat.

Corn requires a high temperature at night-time as well as in the day; a long growing season and a large amount of water. Corn is not grown successfully in our country where the average precipitation for the months of June, July and August is less than eight inches. Rye, barley, buckwheat, rice and potatoes have in recent years been used by us more extensively than ever before.

Rice is more restricted in range than are the other cereals. A high temperature and heavy precipitation are required. Level land favoring irrigation is another very important condition. About nine-tenths of the world's production of rice is grown in the Orient. We produce about 70 per cent. of what we consume. The area of rice in California is steadily increasing.

Large quantities of flour have been saved through the extensive use of potatoes. We grow large quantities of potatoes, but the crop does not do well in the warmer parts of our country nor in areas where the annual precipitation exceeds 50 inches.

Everywhere saving of wheat is being made as the result of earnest coöperation with the Food Administration. Actual figures show that in the hotels and restaurants in New York City there was saved on

Tuesday, November 13, 1917, more than 967 barrels of flour. The next day the saving amounted to 517 barrels of flour. During the month of October, 1917, the hotels and restaurants of Massachusetts saved 4663 barrels of flour.

Bread can be saved in every home by using thought in slicing the supply for each meal so that the amount left over may be reduced to the minimum. Serving both large and small slices is another means of reducing waste. Let us suppose that each man, woman and child in the United States were to save on the average one slice of bread per week. This saving would total approximately 5,000,000 loaves per week. Will *you* save a slice?

Application of Thrift.—Conservation of wheat and elimination of waste as applied to both wheat and bread will result in a very great saving. But we must do more than this. We must increase our yield of wheat. Without adding to the acreage devoted to this crop the total output can be very greatly increased. In France the average yield per acre is 20 bushels. If we could raise our yield to this, which would be an increase of 5 bushels per acre, it would add about 270,000,000 bushels to our annual output.

There are considerable areas of land in the semi-arid West not now cropped upon which wheat can be grown. If we could add 1,000,000 acres to our wheat fields, and from this area secure but 10 bushels per acre, we would add 10,000,000 bushels of wheat

to our total yearly crop. As a result of the efforts of our Department of Agriculture the acreage sown to wheat in the United States in 1917 was about 18 per cent. greater than that sown in 1916, and there must be an additional increase.

Save Sugar.—Everybody is fond of sugar and therefore under ordinary conditions large quantities of it are consumed. Sugar is a very important food because it is a producer of energy and body fats, and because it can be assimilated so very quickly. This makes it especially valuable to soldiers. We eat more sugar than we realize because it is found in many vegetables and fruits and also in milk. In addition, the starch which we derive from various foods is changed in the body to sugar.

For many centuries sugar has been produced from sugar cane. The climatic conditions required by this plant confine it to the tropical zone. Although we produce much cane sugar, we import extensively. About nine-tenths of what we buy comes from Cuba, Porto Rico, the Hawaiian and the Philippine Islands; Java and India are other producers.

In 1747 it became known that sugar could be produced from the sugar beet, but it was not until 100 years later that the manufacture of beet sugar became important. Requiring less moisture and a lower temperature than does sugar cane, the sugar beet has a much wider range. Germany, France, Belgium, Austria-Hungary and Russia are the leading pro-

ducers. The industry is growing in our country, but as has been stated we are sugar buyers.

Consumption and Conservation.—We are very fond of sweets, as is shown by the fact that we manufacture yearly about $200,000,000 worth of candy in our candy factories. How much candy is made in the homes is not known. Comparatively little of this candy is sent out of the country. It is evident that a large saving in sugar can be effected by reducing our consumption of candy.

A great deal of sugar is used in cakes, pies, tea, coffee, soft drinks and beer. Only benefit would result from reducing our consumption of these. The sugar that is daily left at the bottom of tea and coffee cups shows that there is *waste* as well as *use*. The amount of sugar used in beer is enormous. It is estimated that in 1917 we used more than 100,000 tons of sugar in our breweries. This is the equivalent of more than 200,000,000 pounds of sugar.

In 1916 our average annual per capita consumption of sugar was about 85 pounds. In war time our allies and the men at the front needed sugar, and it was our duty to see that they were supplied. Our allowance of two pounds per capita monthly during the war meant a saving of 350,000 tons per year.

We can add to our production of sugar by increasing the area devoted to sugar beets. Since the beginning of the beet sugar industry, sugar beets have

been increased in size and in sugar content, and it is possible that additional improvement can be made.

Every person who lives on a farm or who has a garden can be a producer of a substitute for sugar. Grow a few sugar beets, and after having washed them and soaked them in water for about 20 minutes, boil them. The boiling will yield a thick syrup which can be used in cooking. Many people can help conserve sugar by keeping bees, for honey is a good substitute. In fact, in ancient times sugar was not known, honey being the sweet used.

We are doing much to conserve sugar, but we can do more. Let us deny ourselves candy, soft drinks, and tea and coffee if necessary. Let us exercise greater care in our use of sugar in all ways. If we drink tea or coffee, let us omit the sugar. Many of our fruits are very palatable without sugar. Prohibition as a national measure will save enormous quantities of much needed sugar.

Meats and Fats.—It is not alone vegetable foods that we must conserve but animal foods as well. Although vegetable foods furnish all of the nutrients, meats supply a more concentrated form of food than do vegetables. Meats are rich in protein, and the oxidation of this within the body produces heat and muscular energy.

In early times man had but to go into the forest in order to secure meat, but as the population of the earth has increased, game animals have rapidly diminished. We now raise cattle, sheep, hogs and

other food-producing animals in large numbers, but in spite of this the meat problem is becoming more serious all of the time. Twenty years ago fresh beef was one of the leading exports of the United States. In 1901 we exported 263,000,000 pounds of fresh beef, while in 1914 only 6,000,000 pounds were exported.

The war made the meat problem a very serious one. The domestic supplies of our allies soon became practically depleted. Because of the shortage of ships, much less than the ordinary amounts of meat were shipped from Argentina, Australia and New Zealand to our allies. In the aggregate much meat intended for them went to the bottom of the sea.

Use and Conservation.—How can we conserve meat? In the first place we can reduce our per capita consumption with no disadvantageous results. As a matter of fact such reduction would, in the majority of cases, improve health conditions and would in all cases reduce the cost of living.

We have been using about 170 pounds of meat per capita yearly, or a trifle less than one-half pound per day. This is a much larger amount than is used by the people of most countries. Let us suppose that on the average we can reduce our consumption of meat *one-fourth pound per capita per month.* This reduction of four ounces per month would mean a total annual saving of 300,000,000 pounds.

But there is waste as well as large use. Meat left upon the plates of people in homes, hotels and din-

ing cars is a very familiar sight. Much of this waste has gone into the garbage can. The chief reason why meat is thus left uneaten is that the portions served are too large. There has been much improvement, but there is room for more.

Substitutes.—We can make much more extensive use of poultry than we do and thus conserve our meat supply. Poultry is a valuable food for it is rich in protein, although not rich in fats. Eggs are rich in both. Although the poultry industry in the United States yields products valued at $750,000,000 annually, it could be greatly increased to advantage. During the summer fowls on farms in large measure supply themselves with food. A few chickens can be kept on village and town lots and cared for by children. In addition to the food supply thus obtained, children are given responsibility and this is a matter of very great importance.

Families can practice conservation as applied to eggs by preserving them during the season when they are cheap. They can be packed in a preparation of lime and salt or in liquid glass and kept for months. China, a densely populated country, sells us large numbers of eggs. This shows that there is an opportunity for further development of the poultry industry in the United States.

It is estimated by our Department of Agriculture that we suffer an annual loss of eggs to the extent of $50,000,000. This is in large measure due to carelessness in packing and handling the product.

The sea is a great storehouse of food and we can draw upon it much more largely than we do. Every pound of food taken from the sea reduces the demand made upon the soil. The people of Europe and eastern Asia are great consumers of fish.

Fishing is very extensively developed in the British Isles, Norway and Japan. With our great ocean frontage and our many lakes and streams, we are in a position to profit enormously from the harvests of the sea. Our rapid transit and system of refrigeration makes it possible for people in our interior cities to have the best of fresh sea fish. The work of stocking our lakes and streams can be greatly extended.

As a rule fish are rich in protein and some varieties are rich in fats also. When eating fish we are getting the same food value for less money than when eating meat. Fish is therefore of great importance to people of moderate means.

Butter, so extensively used in this country even by the poor, is an expensive article of food. Its value lies in the fact that it contains about 85 per cent. of fat. Often butter is used for cooking when cottolene, crisco, lard, cotton-seed oil, olive oil, corn oil, or some other preparation should be employed.

Care in the serving of butter will result in saving in the average family. We should not serve more than it is likely the individual will use. To a considerable extent the consumption of butter can be reduced through the use of gravy, peanut-butter and

jams. Families living in the country or even on town lots can, by making jams, save fruit which otherwise would be wasted.

Olive oil is an excellent food, being about 20 times as nutritious as milk. It is less expensive to use in cooking than is butter. Great quantities of this oil are used in Italy, southern France and Spain. Our olive growing area in California can be extended and more use made of olives and olive oil. Nuts can in a measure supply the place of meat. Many kinds of nuts can be grown much more extensively in the United States than they now are. Our ordinary custom is to use nuts as an extra rather than as a definite part of our menu.

We cannot too frequently remind ourselves of our duty to save food. The saving cannot be done by our officials in Washington; it must be done by you and by me. Each one of us must accept his small but vitally important part of this responsibility.

CHAPTER XI

INCREASING THE FOOD SUPPLY

Domestic Pursuits Paramount.—All schools—rural, town, city—must offer work in home economics, domestic science, domestic art, household arts, applied chemistry, and the like. Girls, and boys as well, should know something about food values, food substitutes, what constitutes a well-balanced ration, and be able to plan simple menus and understand thoroughly the necessity for economy in cooking. Waste in the matter of foodstuffs is not alone noticeable in great cities, but even more so on the farms and in rural communities.

There should be established school employment bureaus that the position and the worker may be brought together; the product of the school garden should be used in the school cafeteria and in the Home Economics classes in their work in canning, preserving and storing foods for use in school and home. Financial remuneration should be given those who do outside work, but always strictly in accord with results accomplished; and no student who works for the common good should be penalized in the matter of credit.

Commissioner Claxton says in the *Sierra Educational News* for June, 1918:

"The schools can help in the conservation of food by giving instruction both to children and to their parents in the wise use of foods and the proper selection of substitutes for foods that can be exported, and especially by showing the people of the open country, villages and small towns how to feed themselves most effectively with foods that can not be exported and that cannot be put on the city markets without loss, and thus to save the largest amount possible of transportable and exportable foods for the use of our city population and for our soldiers and allies across the seas. In this way the flow of food products from the markets to country and village may be greatly reduced and the flow from the country to the city and across the seas may be greatly increased."

And David F. Houston, Secretary of Agriculture, writes in the same magazine:

"There is a continuing need for large supplies of food and food products, not only for our own population but for the Allies in Europe, who will depend more and more on this country. . . .

"The indicated increased acreage in food crops this year (1918) over the record crop of 1917 is gratifying. An increase over the record for peace times would have been striking in view of all the difficulties. The vigorous efforts of the farmers evidence their patriotic determination to help win the war. Reports indicate that in order to plant larger acreages with less help than ever before farmers are work-

ing from early dawn until black darkness, utilizing to the fullest capacity all their man power, family power, horse power and machinery and setting an example of extraordinary exertion and efficiency which might well be followed in other essential industries."

How completely the allied countries must for a long time rely upon the United States for necessary food is illustrated by the following quotation from an article by Vernon Kellogg.[1]

"For three years America has helped to keep Belgium alive. It has sent, with whatever regularity has been possible, the wheat, rice, dried peas and beans, lard and bacon that furnish the daily ration for the ten million unfortunates in Belgium and occupied France. One-half the people of Belgium to-day receive a part of all of their daily rations from charity. Over a million and a half get their food by standing each day in the long soup lines in front of communal kitchens. Whenever our food shipments decrease these soup lines increase, because when there is a shortage of food in Belgium the soup lines and the children canteens are the first to be cared for. In one month the soup lines of proud old Antwerp increased from forty thousand to one hundred and fifty thousand. That meant that every other man, woman and child in that great city had to rely on the soup lines for daily bread."

[1] "Belgium, America and Food."—*Sierra Educational News*, June, 1918, p. 326.

FIG. 8.—SCHOOL GARDEN

The school garden movement bears a close relation to food production. "The farmers are badly handicapped by shortage of labor. What they produce must be supplemented. Here is where the war gardens perform their great service. The vegetables grown in 5,000,000 back-yard and vacant-lot gardens—although each of them is small, no more than 25 by 50 feet—can raise easily the equivalent of all the food needed by an army of 1,000,000 men for eight months. Father, mother, what can I do to help? is a question which hundreds of thousands of school children have asked time and again. . . . We know of no more helpful, more patriotic service that any of them can perform than to add something to the food supply of the nation." [2]

Education That Educates.—That the schools of the nation have now an additional task to perform there can be no doubt. Our upper grammar grades, our intermediate schools, our high schools, our colleges are filled with young men who can be made useful on the farm and in the laboratory. It has taken a great calamity to bring home to us, clearly and forcibly, the fact that as efficient as our educational system is we have not begun to realize our possibilities in hitching the schools to the actual conditions of life. States, counties, municipalities, rural districts, schools everywhere throughout the land are appreciating this, and have made such progress during the last few months as seems incredible. School

[2] "War Gardening—Patriotic and Educational," Charles Lathrop Pack. *Sierra Educational News*, June, 1918, p. 328.

grounds have been plowed up and are under cultivation; lands have been leased; high school boys have given assistance upon the farms where help could not be secured, and where crops would otherwise have been destroyed; girls are canning, preserving and storing fruits and vegetables, are learning the nature of food substitutes, and how simple menus can be prepared—these and many other things are being done that will prove of the greatest value, not alone to the community in increasing the food supply but in teaching these young men and women one of the greatest lessons they should learn—that of economy and thrift.

The following is taken from an article prepared especially at our request by Herbert Hoover and published in the Food Conservation number of the *Sierra Educational News,* June, 1918, page 324:

"There is a great army of young patriots . . . ready for you teachers to line up as a strong reserve in the second line trenches. Every army has to have its reserves—reserves of men, reserves of food, reserves of ammunition. Every child in the public schools . . . can be a food soldier. He can stand in line, shoulder to shoulder with all the others, with firm intent to produce food and to conserve food, so that the reserve of food for their big brothers and their fathers in the front line trenches will be always ready in France when needed.

The country has had cause to be glad that so many of its young people have already received instruction in conservation of food and clothing and

loyalty of act and thought. A great deal has been done, but it is undoubtedly true that a great deal more can be done. . . . Is the cause not great enough? Is the result not worth while? The Food Administration looks to you for support and loyalty."

Reconstruction and Conservation.—We are led to the conclusion that with greater extensive and intensive food production, and with improved methods of preserving, canning and storing of foodstuffs there must come as well a decided sentiment for food conservation. Our resources must be husbanded. From a wasteful policy we must develop, through scientific methods, a policy of economy and thrift. We must meet successfully *the great struggle now confronting us at the close of the war.* It must be apparent to any student of economics that, while the war offered a tremendous problem, this problem is not solved simply by success on the field of battle. The period of reconstruction now before us means not alone a *different Europe,* but a *different America.* Changed conditions will be noted in our economic, our industrial, our social, our civic life. This means, if it means anything, that there must prevail for the proper solution of these problems different school conditions than those we have known in the past.

Food conservation study outline[3] prepared especially for school use by Herbert Hoover:

[3] See *Sierra Educational News* (Food Conservation Number), June, 1918, p. 334.

"How Boys and Girls Can Assist the Food Administration

"1. **In School.**—Waste no food from your lunch basket. If there is more than you can eat, and there is no one with whom you can share it, take it home.

"Learn from your geography lesson where wheat comes from, learn why the world is short of it and why we must all save it for the Allies and the armies, study the importance of ships and why with the present shortage they must ply between the nearest ports if the Allies are to be fed. When you have your lesson thoroughly in hand, go home and tell the news.

"Take home the recipes given you by your teacher for the use of wheat and meat substitutes.

"Make posters or cartoons about food and give them to your teacher to put up in the town.

"BE ACTIVE MEMBERS OF THE FOOD ADMINISTRATION. SAVE WHEAT AND MEAT, SUGAR AND FATS.

"2. **At Home.**—Do not ask for food between meals.

"Do not complain or fuss about the food put on your plate.

"Clean your plate.

"Work in the garden to grow the vegetables which are going to keep you healthy. The com-

bination of the exercise and the fresh foods will save many a doctor's bill.

"BE ACTIVE MEMBERS OF THE FOOD ADMINISTRATION. SAVE WHEAT AND MEAT, SUGAR AND FATS.

"3. **Outside Your Home.**—Save wheat, meat, sugar and fats when visiting. Even as guests in other people's houses you will not need to eat wheat if it is served you. You can refuse it courteously and perhaps your example of active loyalty will help make others follow the Food Administration requests.

"If you see anyone wilfully or maliciously destroying food, or if you hear them talking in such fashion that they encourage the waste of food, report the matter to your teacher, your pastor or the Mayor.

"SPECIAL THINGS BOYS CAN DO

"Do not use green apples, nuts or any growing things as missiles to be thrown at telegraph poles, squirrels or other interesting targets.

"Pick wild fruits like wild strawberries, blueberries, blackberries and take them home to the family.

"Keep out of your neighbor's garden and see to it that other children keep out of it.

"If there are pig clubs, baby, beef or corn clubs in your town, join them—be active and loyal members.

" BE ACTIVE MEMBERS OF THE FOOD ADMINISTRATION.
SAVE WHEAT AND MEAT, SUGAR AND FATS.

" SPECIAL THINGS GIRLS CAN DO

" If there is a canning club in your town, join it.

" If there is a girls' community garden, help in that.

" Take care of the salad vegetables in your home garden.

" When you help in the house, pare the vegetables thinly, so there is no waste.

" Cut the fat off meat and fowl to be used in cooking.

" Learn to make delicious corn muffins to save the wheat.

" Read canning articles carefully so that you can help mother to can vegetables that will keep.

" BE ACTIVE MEMBERS OF THE FOOD ADMINISTRATION.
SAVE WHEAT AND MEAT, SUGAR AND FATS.

" **Suggested References for the Teacher.**—'Everyday Foods in War Time,' Rose, Mary S.; 'Food Products,' Sherman, Henry; 'Industrial and Commercial Geography,' Smith, J. Russell; 'The Food Problem,' Kellogg, V., and Taylor, A. E.

" **For the Pupils.**—'How We are Fed,' Chamberlain, James F.; 'The Story of Foods,' Crissey, Forrest; 'The United States Food Leaflets.' "

TOPICS FOR STUDY

Chapters IX, X and XI

What opportunity is there for an increased production of food in your vicinity?

Make a study of the way in which the people in a given city are supplied with food.

Learn definitely what disposition is made of the garbage in the same city.

Discuss the importance of food conservation in peace times.

Of what advantage are farmers' associations?

What is meant by a "balanced ration"?

Suggest menus embodying the "balanced ration" principle for both manual laborers and professional or office people.

Consider climatic conditions in this connection.

With what particular foods did you notice the greatest saving after our entrance into the war?

What are the greatest sources of waste of raw foodstuffs?

How may these grains, fruits, vegetables and meats be conserved?

List those foods that were most necessary to our fighting men and that could be most easily transported overseas.

REFERENCES

Bulletin: "Agricultural Preparedness and Food Conservation: A Study in Thrift." Articles by Bexell, J. A.; Blake, Katherine D.; Chamberlain, A. H.; Daniel, Henry R.; Dempsey, Charles H.; Straus, S. W.; Wilson, R. H.

Same in Proceedings, N. E. A. for 1917.

Bulletins, U. S. Food Administration.

Chamberlain, Jas. F.: "How We are Fed."

Cobb, Ernest: "Garden Steps."

Colville, Frederick: "War, Patriotism and the Food Supply." *National Geographic Magazine*, 31:254 (Mch., 1917).

Crissey, Forrest: "The Story of Foods."

Fairchild, David: "Forming New Fashions in Food." *National Geographic Magazine*, 33:356 (Apr., 1918).

Huntington, A. N., and Rankin, Janet: "Food Problems."

GRAVES, RALPH: "Helping to Solve Our Allies' Food Problems." *National Geographic Magazine*, 33:170 (Feb., 1918).

HOOVER, HERBERT: "The Food Armies of Liberty." *Ibid.* 32:187 (Sept., 1917).

HOUSTON, DAVID: "Soldiers of the Soil." *Ibid.* 31:273 (Mch., 1917).

KILPATRICK, VAN EVRYE: "The Child's Food Garden."

MORRISON, EDWARD, and BRUES, CHARLES THOMAS: "How to Make the Garden Pay."

McGEE, W. J.: "How One Billion Can Be Fed." *World's Work*, 23:443.

POWELL, OLA: "Successful Canning and Preserving."

Sierra Educational News (Food Conservation Number), June, 1918: Articles by CLAXTON, P. P.; HOLDEN, P. G.; HOUSTON, DAVID F.; KELLOGG, VERNON; PACK, CHARLES LATHROP; HOOVER, HERBERT; TRUE, A. C.

WELLMAN, MABEL THATCHER: "Economy in Food."

LIBRARY
STATE NORMAL SCHOOL
MANUAL ARTS AND HOME ECONOMICS
SANTA BARBARA, CALIFORNIA
7399

CHAPTER XII

CONSERVING AND USING THE SOIL

General Statement.—If you have been in the country during or after a heavy rain you have observed that the water flowing in the roadside ditches and streams was muddy. The water reached the ditches and streams after having flowed across pastures, meadows and cultivated fields. The mud in the streams came from the fields and represented soil which had been eroded by the running water. Streams everywhere are doing this work and much of the soil removed in this way the streams carry to the sea. Our ability to produce a food supply is therefore directly related to this activity of streams.

The soil which the streams are moving seaward represents an actual loss in dollars which we are all anxious to prevent. How can this loss be prevented or checked? Perhaps you have observed that areas covered by grass or forest growths are not cut up by gullies and ravines as are the plowed fields. This shows that vegetation checks erosion. Other things being equal, steep slopes erode much more rapidly than do gentle ones.

These facts mean that steep slopes should not be cultivated. Their forest cover, if they have one, should be permitted to remain. If there is no natural

timber, trees should be planted, or if the slopes be not too steep, the land may be in pastures or meadows. This condition will lessen floods and it is at times of floods that most erosion occurs.

Check-dams placed along streams lessen the velocity of the current and therefore check erosion. A reservoir or lake-like condition is created on the upper side of each dam, thus holding the water temporarily in check. Because of this condition much material is deposited on the up-stream side of each dam.

In China, Spain, France and in our Southern Appalachian section there has been great loss because of the removal of the soil. Man cannot create soil. Nature does this work and the process is very, very slow. The protection of the soil is therefore a matter of the greatest importance because directly or indirectly our food supply is obtained from the soil.

The Occupation of the Soil.—The ability of a nation to supply itself with food depends upon a number of conditions. Among these are the density of population, the percentage of the people engaged in agriculture and the percentage of the land tilled.

Our population increased from 4,000,000 in 1800 to 92,000,000 in 1910, at which time our density of population was 30 per square mile. In several of the countries of western Europe the density for the same date was between 300 and 400 per square mile.

For a long time the rapid increase in our popula-

FIG. 9.—HOW THE FARM IS DESTROYED THROUGH EROSION

tion was chiefly absorbed by the rural sections. For years the relative increase in rural sections has been steadily decreasing. In 1880 our rural population was 70.5 per cent. of our total population. In 1890 the per cent. had fallen to 63.9 and ten years later to 59.5, while in 1910 only 53.7 per cent. lived in the country.

The corresponding increase in urban population is in part due to the greater demand for labor in the cities than in the country, to higher wages, and the many other attractions of city life. Not only have the immigrants been settling in the cities in larger numbers than during earlier years, but there has been a marked movement from the country to the city. This has recently in a measure been checked.

The Use of the Soil: Per Cent. of Our Land Tilled.—In 1850 about 15 per cent. of our total land area was in farms. In 1910 this had increased to 46 per cent. About one-half of this was in improved farms. At the same time in the corn belt about 90 per cent. of the total area was in farms. In Iowa the per cent. was 95. On the other hand, in some of the Rocky Mountain states only one-tenth of the total area was in farms, and in Arizona the per cent. falls to 1.7. It is evident that our country is able to produce much more food than it does.

There were in the United States in 1910, 6,361,502 farms. The average size of these farms was 138 acres, 75 acres of which were as an average improved. There should be a much larger number

of farms in our country, as this would mean more intensive work. The breaking up of the large holdings, sometimes amounting to many thousands of acres, is now taking place. On farms of 160 acres, or even 80 acres, fence corners which should be tilled are in many cases allowed to grow to weeds.

As a result of war conditions we are beginning to realize that a very large amount of food can be produced from the vacant lots in our cities. In all of our cities there are many men out of employment, and these men, as well as many who are employed, should be brought in contact with the unused land.

School children in the cities can do, and, in fact, have already done, through the cultivation of vacant lots, much to increase the family food supply and decrease the cost of living. Mr. Clayton F. Palmer, Supervisor of Agriculture in the Los Angeles City schools, reports that in 1917 there were in that city 90 vacant lots cultivated by school children. Rental was paid in but three cases. During the same year more than 14,000 school children, representing 9000 homes, worked upon home gardens. The total area planted was 900 acres. Other cities report like activity.

The production of food is not the only value derived from this work. Children are trained in habits of industry and thrift and the spirit of coöperation is developed. It places upon the young workers a certain amount of responsibility, which is a matter of very great importance. To all of this may be

added the value of the work from the standpoint of health.

Development of Irrigation.—Irrigation has brought extensive tracts of arid land under cultivation. In 1910, 415,000 acres of government projects were cropped and the value of these crops was more than $12,500,000. Five years later 800,000 acres were tilled and the value of the crops produced was $19,000,000. Although there is much waste land that can never be irrigated, there are large areas that may readily be reclaimed.

There are irrigation projects located in all of our Rocky Mountain and Pacific Coast States and there are some projects east of the mountains. The government supplies the water and sells the land on the installment plan. Only those who are to become actual settlers may purchase the land, and the number of acres which one person may purchase is limited.

Farming under irrigation has some decided advantages. The water can be placed upon the land just when and where it is needed and in the amount desired, which of course is not the case where rainfall is depended upon. In many cases more than one crop per year is grown. The relatively dense population in the irrigated sections means better roads, better facilities for handling and marketing crops, and greater social advantages. Owing to all of these conditions our food supply can be materially in-

creased through the bringing of more land under irrigation.

The development of irrigation means the storing of water, which otherwise would be wasted, and its application to the land. In our semi-arid regions the streams are subject to flood. This is in part due to the seasonal distribution and in part to lack of vegetation. Streams which at times carry large volumes of water are at other times reduced to mere brooks or perhaps their channels are dry.

We should continue the expenditure of large amounts of money in the construction of reservoirs in order that our flood waters may be in a measure conserved. As a rule the reservoirs should be covered in order to reduce loss through evaporation. The large canals should be of concrete, as otherwise much water is lost through seepage and the work of burrowing animals.

We can add to our area of farm lands by reclaiming swamp areas. When such lands have been drained they are, because of their fertility, capable of yielding large crops. In many of our States there are extensive tracts of marsh land which will in time be reclaimed.

Use of Fertilizer.—A good yield of wheat would weigh approximately four tons to the acre. An acre of corn would weigh much more than this. From an acre of sugar beets from 8 to 20 tons are harvested. From where does all of this material come? A part of it comes from the soil. The water

dissolves the plant foods which the soil contains, and these materials are taken up by the plants and built into their tissues. In other words, each crop removes much soil.

Because the growth of plants impoverishes the soil this loss must be made good if we are to continue to harvest crops indefinitely. Where there are annual floods nature does much to fertilize the soil, for there are constant additions of silt. The lower Mississippi, the Colorado and the Nile are illustrations.

The three most essential plant foods are potash, phosphorus and nitrogen. Up to the time of the opening of the war Germany practically supplied the world with this fertilizer. We have large quantities in Utah and California and in our kelp beds from Alaska and Mexico. Chile has held a monopoly of the nitrate industry.

About 79 per cent. of the atmosphere is nitrogen, but the leaves of the plants cannot absorb it as they can carbon. Certain bacteria called nitrogen-fixing plants do take nitrogen from the air. They live in large numbers on the roots of the legumes. The nitrogen is converted into a nitrate and built into nodules on the roots of these plants. When the plants are plowed under, the nitrate, which is soluble, becomes available as plant food. The growing of leguminous crops increases the yield of the crops that follow. It has been found that a leguminous crop adds, on the average, 200 pounds of nitrate to the acre.

In order to increase our yield of food the Secretary of Agriculture has made arrangements for the sale of nitrate of soda directly to farmers. Our government is doing the importing and only farmers can purchase.

Of phosphorus, several of our states have large amounts. In the case of cereal crops a considerable part of the phosphorus goes into the stalks. This shows that straw and cornstalks should be plowed under rather than burned. The waste portions of vegetable crops grown on lots, as well as the leaves of shade and fruit trees, should be spaded under.

Rotation of Crops.—The amount of a given food abstracted from the soil depends upon the crop grown. This being true, it is evident that a given piece of land should not grow the same crop year after year. On the contrary, we should practice rotation of crops. We have paid comparatively little attention to this because of our very large area of virgin soil.

Selection of Seed.—Where seed has been carefully selected larger yields have followed. In some sections the corn crop has been materially increased through the selection by school children of better seed-corn. No matter what crop you are preparing to grow, good seed is of the greatest importance.

Dry Farming.—Some of the arid land which cannot be reclaimed by irrigation can be dry farmed at a profit. This means the selection of the crops best adapted to dry weather conditions. Kaffir corn and

durum wheat are both grown profitably on dry lands. Our constant increase in population will make it necessary to utilize as fully as possible our non-irrigable lands.

Other Forms of Government Aid.—There are many ways in which our government is aiding the tillers of the soil. The soil survey commenced in 1900 has been of great value, as it enables the farmer to determine the crops to which his farm is best adapted. Plant pests and the best means of fighting them are studied. New plants are brought in from foreign countries and added to our list of useful ones. Reports are published and distributed free or at very slight cost. Demonstration trains visit various sections carrying helpful messages to the farmers. The Farm Adviser plan in force in some states and countries, where an expert goes from farm to farm to demonstrate proper methods or hold school or conferences on the model farm, is of great help. Agricultural Departments of State Universities offer short courses for students or farmers. We as individuals must coöperate by doing all in our power to conserve the soil and to cause it to yield abundantly.

TOPICS FOR STUDY

What is the character of the soil in your vicinity?

Is much soil being lost as a result of erosion?

Is there any unused land in your locality?

Show that education is necessary to the most successful tilling of the soil.

Is irrigation practiced in your locality?

Make a list of crops raised in your locality and state. Is rotation practiced? What is used for fertilizing?

What are the important irrigation projects of the country? Secure photographs of them.

REFERENCES

DANA, SAMUEL T.: "Farms, Forests and Erosion." Yea-Book U. S. Dept. of Agri., 1916, p. 107.

FLETCHER, S. W.: "Soils."

HILGARD, EUGENE W.: "Soils."

KING, F. H.: "The Soil."

MCGEE, W. J.: "Soil Erosion": Bulletin 71, U. S. Bureau of Soils.

SCOFIELD, C. S., and FARRELL, F. D.: "Agriculture on Government Reclamation Projects." Year Book U. S. Dept. of Agri., 1916, p. 177.

SNYDER, HARRY: "Soils and Fertilizers."

CHAPTER XIII

OUR WATER SUPPLY

WITHIN the last few years the people of New York City have spent about $170,000,000 in developing in the Catskill Mountains a water supply and in carrying it to the city. This shows how vital is an adequate supply of water. Every large city in our country has spent vast sums of money in securing an adequate supply of water.

First of all we must have a supply of water for drinking purposes. We need it for bathing, cooking, laundry work, the flushing of sewers, fire protection and in many industries. Because the furnishing of homes with an abundant supply of pure water costs a great deal of money, we should exercise care in the use of water.

Very frequently one will see water dropping or running very slowly from one or more faucets in a house. In the course of a day considerable water is lost in this way. Not infrequently water is turned on at a wash-basin and forgotten. This occurs even more frequently on the lawn or in the garden, where water may be left running all night. Leaks in some cases are not detected for weeks after they begin.

Where water is metered carelessness shows in the monthly bill, but where a flat rate is paid this is

not the case. It has been estimated that approximately one-half of the water supply in our large cities is wasted. The Public Service Bureau of the Water Department of Los Angeles, California, found that about 90 per cent. of all complaints regarding water bills could be traced to leaks. Let us each do our part in checking the loss of water.

Irrigation.—Plants as well as animals must have water at frequent intervals, and since all of our food is derived either directly or indirectly from plants, water is vital to human beings from this point of view.

Precipitation is very unequally distributed. In some areas it is far beyond enough to meet all needs. In others rain very seldom falls. Most of the soil in the hot desert areas is very fertile, and as these areas have a high percentage of sunshine they would be well adapted to food production but for the lack of rain.

A large part of the precipitation is wasted as far as utilization by plants is concerned. To conserve some of this water and apply it to arid sections, thus making them productive, is one of the greatest undertakings before our people to-day. Irrigation was commenced in the Old World many centuries ago, and even in the United States it has made marked progress.

In 1918 there were in operation about 25 government irrigation projects. There were on these some 19,000 farms representing 800,000 acres of producing land. About 50 per cent. of the total area

was devoted to forage, 25 per cent. to cereals and 7 per cent. to fruits. There remains in the United States much land which can be brought under irrigation. Our government is planning to develop large areas for the benefit of our soldiers and sailors.

Water as a Source of Power.—Falling water strikes a blow, exerts energy, performs work. The work may be that of eroding the rocks or it may be work planned by man. The amount of energy exerted depends upon the volume of the water and the distance that it falls. One horsepower is the unit of measurement, which is the energy necessary to lift 550 pounds one foot in one minute.

It is in the mountainous and the hilly districts of our country that there are the greatest opportunities for the development of power from streams. The Niagara River furnishes a striking exception to this, for it represents energy to the extent of 5,000,000 horsepower, of which only about 350,000 are developed.

It has been estimated by our Geological Survey that we have available at the time of minimum flow some 36,000,000 horsepower. By the storing of flood waters this can be increased enormously—perhaps to 200,000,000 horsepower.

Although primary water power is yet used extensively, the development and the use of hydro-electric energy from falling water has revolutionized economic conditions of life. This energy can be transmitted for long distances over copper wires to points

where raw products, transportation facilities, labor, capital and markets are available.

Naturally loss of power increases with the distance transmitted. Buffalo, N. Y., which is about 25 miles from Niagara Falls, uses a large amount of energy derived from the Falls. St. Louis uses a great deal of power transmitted from the Keokuk Project, 137 miles distant. Power is transmitted from the Sierra Nevada Mountains to San Francisco, a distance of about 175 miles. The Central Colorado Power Company transmits power 300 miles. Energy transmitted over a radius of 100 miles would serve an area about one-half as large as New England.

For the successful development and utilization of water power, or energy derived from it, streams should be fairly uniform in flow. Stream flow is related to forest or meadow cover, to the nature of the soil and rock, to the number of the lakes, and to the seasonal distribution of the precipitation.

Owing to the natural reservoirs in its basin the Niagara River has a remarkably even flow, the maximum being but 35 per cent. more than the minimum. The St. Lawrence, because of forest cover as well as reservoirs, has a very uniform flow. The Deschutes River in Oregon is spoken of as "the river that never changes." Within its basin 100,000 horsepower can be developed, and all of the best power sites are within 100 miles of Portland.

In the application of hydro-electric energy to transportation there is a wonderful future. Shortage of coal is a serious war condition, and at all times

the movement of coal makes extraordinary demand upon our railroads. Former Secretary McAdoo emphasized the tremendous opportunity for the use of this power by our railroads as well as the great need for so using it.

We should conserve water and use the power thus made available because it can do, as in the future it *must* do, much of the work now being done by means of fuel. Approximately 30,000,000 horsepower are developed in this country through the use of coal. About 10 tons of coal are required to develop one horsepower. It is estimated that one-half of the energy developed from coal could be more economically developed from water power. Here would be a saving of 150,000,000 tons of coal annually. The coal, once used, is gone forever, but the water power can be used indefinitely.

The first step in the conservation of water is the guarding of the forests upon the mountain slopes and hillsides. Vegetation should not be removed from steep slopes because the water, having no vegetable cover to check its movement, swells the streams quickly after rains and fails to keep the streams supplied at other times. All farmers can help in preventing loss of water.

The planting of trees upon steep slopes from which timber has been removed is a very important work. Check-dams, constructed along stream courses, are great aids in checking the loss of water. Large reservoirs for the storing of the water are, of course, necessary.

That the more extensive use of water is imperative there can be no doubt. Our demand for food is ever increasing. In our arid sections larger quantities of water must be stored so that more land can be brought under cultivation. We need more water power for purposes of manufacturing, transportation and illumination, thus saving mineral fuels and releasing cars for other lines of work than carrying coal. Checking the loss of water as a result of rapid run-off will increase the navigability of our streams and reduce loss through floods.

The question of the ownership of a resource which is to exert a greater influence upon life as the years go by is one of large and increasing importance. Unfortunately, many of our most valuable water powers have been disposed of. The remainder should be kept in the hands of the people and leased on terms that will insure a reasonable return to the lessees.

TOPICS FOR STUDY

Make a study of the supply and use of water in your city or locality.

Investigate the water powers in your state.

By means of a precipitation map, locate the areas in the United States where the mean annual precipitation is less than twenty inches. More than thirty inches.

REFERENCES

MATTHEWS, JOHN LATHROP: "The Conservation of Water," 1910.

PRESSEY, HENRY A.: "Water." *Review of Reviews*, 41 : 68.

STOVALL, D. H.: "Power of a Million Horses." *Sunset*, 26 : 325.

SWAIN, GEORGE F.: "Conservation of Water by Storage."

CHAPTER XIV

THE VALUE OF THE FORESTS

When Gifford Pinchot and other students of forestry began to warn the people of this country that a shortage of timber was not far off, comparatively few took the warning seriously. Our forests were, and yet are, very extensive, and the average person sees no occasion for alarm. Great as is our forest wealth, however, it is but a part of that which existed at the time of the landing of the Pilgrim Fathers. Only scientific management will prevent such loss as has been suffered by Spain, Italy, France, China and other countries.

Distribution of Forests.—Temperature and precipitation are the keys to the natural distribution of forests. In regions where the mean annual temperature is lower than 50° F., and the yearly precipitation less than 20 inches, natural tree growth is not abundant. As a result of this there are large areas which are almost or quite treeless. On the other hand, there are areas, vast in extent, which, because of favorable climatic conditions, are heavily forested.

The commercial forests are, for the most part, those of the temperate zone. Russia, the United States, Canada, Austria, Sweden, Germany and France have great forest wealth. In our own country

there are five important forest regions. These are New England, the Great Lakes section, the South, the Rocky Mountain province and the Pacific Coast. California, Oregon, Washington and Idaho contain about three-fourths of the standing timber in the

FIG. 10.—DISTRIBUTION OF FORESTS

United States. There are in our country about 550,000,000 acres of forest land, or about 18 per cent. of our total area.

For a long time our New England forests met all of our needs. As late as 1850 this area produced 54 per cent. of our total output, but in 1917 it furnished only about 5 per cent. During the same period the output of the Great Lakes region increased from

6 per cent. to 15 per cent., that of the South from 13 per cent. to 50 per cent., and that of the Pacific Coast from 3 per cent. to 18 per cent. Within a short time the Pacific Coast will be the leading producer.

Uses of Lumber.—The early settlers in this country were expert in the use of the axe, for it was this tool which enabled them to convert forest trees into log cabins and make the clearings where their crops were planted. Except in isolated sections the log cabin is a thing of the past, but enormous quantities of lumber are used in the construction of frame buildings. In the manufacture of furniture a great deal of lumber, chiefly hardwood, is used. New York, Chicago, Grand Rapids, Saginaw and Philadelphia are important furniture manufacturing centers.

In spite of the fact that coal, oil and gas are extensively used as fuel, the trees from hundreds of acres of forest are yearly used for this purpose. In fact, this is one of the chief uses to which wood is put.

In traveling by carriage, auto, train or trolley car we are carried in vehicles made in part of lumber. Wood enters into the construction of ships that carry passengers and freight from shore to shore and wood is an essential part of our airships. The trees from large areas are required yearly to furnish telegraph, telephone and electric light poles, and crossties for railroads.

Every year thousands of acres of spruce timber are cut and converted into pulp, which is used in the printing of newspapers, magazines and books and in the manufacture of paper used for other purposes. In 1917 about 5,000,000 cords of wood were so used.

The roofs of mines in all parts of the country are supported by timbers. Wood is used in the manufacture of boxes, barrels, tubs, pails, farm machinery, tools, toys, matches, pencils. On the average the people in this country use about 260 cubic feet of wood per capita yearly. In Europe the average annual per capita use is only about 50 cubic feet; in France it is about 25 cubic feet. We are using our forest wealth about three times as fast as nature creates it. There can, therefore, be but one result unless we practice conservation.

Waste.—Our vast extent of forests has made us extravagant in the use of timber. Serious as is our lavish *use* of this very valuable resource, the *waste* of timber is a still more serious matter. Our source of waste is seen in the way in which many trees are cut. Usually trees are cut farther above the ground than is necessary. The average tree is considerably greater in diameter close to the ground than it is at a height of 5 feet. In consequence there is much loss in cutting a tree at this height. The large limbs and the top of the tree represent another loss. At the mill there is considerable loss as a result of using thicker saws than would be necessary. Only

about one-half of a given forest tree that has been cut for market is actually used.

Forest fires occasion the greatest loss. When a forest fire is well under way and has made considerable progress, it is a terrible thing and is most difficult to control. A fire-swept area is marked by the charred trunks of trees, some standing and others prostrate. About as much of our timber is destroyed by forest fires as is used. Since 1870 our average yearly loss has amounted to $50,000,000. In 1902 Washington and Oregon suffered a loss of $12,000,000. The loss in the National Forests in 1910 amounted to $25,000,000.

Do you wonder why our forest rangers do not prevent certain fires or at least extinguish them before they do much damage? The average area assigned to each ranger is about 150 square miles. Much of this territory is rough—a serious obstacle to travel. Help must usually come from distant points. Owing to the absence of roads much of the journey must as a rule be made on foot. Fire travels rapidly up hill. The progress of fire fighters is sometimes greatly impeded.

Conservation.—Unlike ordinary field crops the timber crop grows very slowly. The average age of the forest trees being cut is probably about 150 years. It is evident that we must begin to conserve while yet our forest wealth is large. About the year 1880 the question of national forests began to be agitated, and in 1891 the first—the Yellowstone National

Forest—was created. There are now more than 150 national forests with a combined area of about 150,000,000 acres.

It is a common occurrence for an individual or a party to build a fire, either for the purpose of cooking a meal or for the enjoyment derived from gathering around it at night. Whenever we visit a forest we should exercise the greatest care. If a strong breeze is blowing a fire should not be made unless necessary, and even then never close to underbrush. When ready to leave your camping place be certain that every spark of fire has been extinguished. When no water is at hand heap sand upon the fire until it has been completely extinguished. If every one who builds a fire in a forest would be faithful in the performance of this simple duty the loss as a result of forest fires would be greatly reduced.

As already pointed out, forest trees should be cut as close to the ground as possible and more of the limbs and tops used. Such material, as well as much of the fallen timber, could be utilized in the manufacture of wood-alcohol, turpentine or tannic acid.

Newspapers should be saved and reused because in doing this we are saving trees. The large amount of timber used yearly in making paper for newspapers suggests another form of conservation. Every large newspaper devotes considerable space to " funny " or " comic " material, most of which is

not comic and some of which is decidedly harmful. If all the material which is coarse or grotesque were eliminated from our newspapers the annual saving of timber would be no inconsiderable amount.

Trimmings from trees on the farm or even on the town lot should be used as fuel. Boxes and packing cases when used as fuel will save more valuable wood. The creosoting of posts, poles and piles is another form of conservation.

It is not simply for the purpose of saving timber that we guard our forests and plant trees. Forests check erosion and in this way are a benefit to agriculture. Floods wash away bridges, sections of road, buildings, and crops and often cause loss of life. Cutting away the forests increases floods and therefore great care should be exercised along this line.

As a result of the deposition of silt in stream channels the streams gradually lose their value as routes of trade and travel. The removal of forests hastens the silting up of the channels. The rapid run off of water after the removal of timber causes the streams to be in flood for a brief period and then to flow with very little volume. This is most detrimental to the development of water power or hydro-electric energy.

Forests are of value because they furnish people with resting places from their busy cares and where they may enjoy nature. They are retreats for the lower animals as well, some of which are game or

food animals, and for numerous birds. These are other reasons for conserving the forests.

Naval Stores.—The pine forests of some of our southern states yield large quantities of turpentine and other allied products. As a result of tapping the trees resin is obtained. The distillation of the turpentine yields resin. The substance which remains after the resin is distilled is called rosin. Tar, which is extensively used in ship building, on the roofs of houses and in street work, is the result of a direct distillation of wood. These products are worth millions of dollars annually, and their manufacture is a serious drain upon the forests.

Tanbark.—The bark of the hemlock and the oak are very extensively used in tanning leather. Owing to the fact that the bark is somewhat bulky, the leather has been shipped to points close to the hemlock forests. Largely on this account New England became the great center of the tanning industry. To-day tannic acid is extracted from the bark and this is reducing the localizing of the tanning industry. When we remember that millions of pairs of boots and shoes are manufactured in this country yearly, we realize that here is another large tax upon our forests.

Rubber.—Rubber is one of the valuable contributions which the forests make to civilization. This product comes from the tropical forests of Brazil, Central America, Mexico and Africa. It is used in

the manufacture of rubber boots, overshoes, rubbers, rubber hats, mackintoshes, gloves, hot-water bags, tires and tubes for vehicles and for hose used in gardens and by fire departments.

The increased use of auto vehicles has enormously increased the consumption of rubber and prices have advanced greatly. Every owner or driver of an auto vehicle should be interested in conserving our rubber supply. This can be done by more careful driving, especially in taking curves, by keeping the tires properly inflated, by examining them at frequent intervals and remedying any damage found and by not overloading the vehicles.

It is estimated that there are now in use in this country about 5,000,000 auto vehicles. This means 20,000,000 tires in use. Suppose that by more careful use of tires one mile could be added to the average service of each tire. This would give a total of 20,000,000 miles. If we assume 4000 miles to represent the average service of these tires we have a saving amounting to 5000 tires. If these cost on the average $20 each, the money saving is $100,000.

With respect to the conservation of forests let us remember that it is not simply nor chiefly what *we* can do directly, although that is important. Our chief work is in so training boys and girls that when they are men and women they will intelligently use this valuable resource. We owe a duty to those who are to follow us and in the proper training of children we are performing a large part of this duty.

TOPICS FOR STUDY

Where does the lumber used in your city or vicinity come from?

Make a study of the activities in some national forest.

Give proofs that our Forest Service is profitable.

Why do so few individuals plant forest trees on their farms?

Make a list of articles in and around your school and home made of timber.

What are the chief hard woods of the United States? Soft woods?

REFERENCES

BOWMAN, ISAIAH: "Forest Physiography."

CHAMBERLAIN, JAMES F.: "Our Forests: A Wasted Inheritance." *Journal of Geog.*, 8: 145.

GRAVES, HON. HENRY S.: "The Fight Against Forest Fires." *National Geog. Mag.*, 23: 662.

KELLOGG, R. S.: "Lumber and Its Uses."

MOON, FREDERICK W.: "The Book of Forestry."

PINCHOT, GIFFORD: "An American Fable." *National Geog. Mag.*, 19: 343.

WILSON, JAMES: "Protecting Our Forests From Fire." *Ibid.*, 22: 98.

CHAPTER XV

OUR MINERAL FUELS—COAL

Let us try to imagine what would result were the entire fuel supply of this country to disappear some night while we were asleep. Upon attempting to turn on the heat or build a fire next morning we should discover that neither of these things could be done. When breakfast time came it would be impossible to cook any food. If we were to go to the restaurants we should find that the same conditions existed there. We should therefore be compelled to eat some cold food, and while doing so the thought would probably occur to us that as soon as the supply of cooked foods had been eaten we should be compelled to live upon raw foods just as animals do.

In few places would there be any street cars to convey us to our places of business because in most cases the electricity is generated through the use of fuel. We could not use our automobiles because these require fuel. It would be impossible to learn what was going on in other cities because fuel is needed to operate the machinery in newspaper plants.

Not a mill, shop or factory would be in operation in the entire city unless water power or hydro-electric energy were employed. Fuel is necessary too in the production of the machinery for these hydro-electric plants. No goods could be shipped

into or out of the city, because locomotives must have fuel. In fact, the steamships upon the ocean would be drifting helplessly about, unable to reach their destinations. When the terrible day came to a close most of the cities and farm houses throughout our country would be in darkness.

These statements may help us to realize how much our present day life is influenced by fuel. In fact, without fuel there could be no such civilization as we know to-day. Except where electricity generated from water power was used, traveling and transportation would be very slow. There would be few books. People could not work or read at night because there would be neither power nor light save that from candles as in former times. There would be much less specialization of labor than at present, and our habits of life would be similar to those of people who lived centuries ago.

Coal.—Our most important fuel is coal and upon it our present civilization in a large measure depends. Although coal has been known for many centuries, it did not assume great importance until after the invention of the locomotive and the steamboat. The first coal mine in this country was opened near Richmond, Virginia, in 1749, but we now rank first among all the countries of the world in the production of this fuel.

What is this wonderful thing called coal, and how is it formed? Sunshine is a necessary factor in plant growth. The energy which growing plants receive from the sun is built into their tissues, placed

in a bank one might say. When a piece of wood is burned this stored-up solar energy is converted into light and heat. When we warm ourselves by means of a wood fire, we are making use of sunshine which fell upon the earth many years and perhaps centuries ago.

Coal is formed of vegetation which was buried in bodies of water beneath sediments carried by streams. If later the floors of these basins were sufficiently elevated vegetation would again cover them. A later subsidence might result in a second layer of sediment-covered vegetation, and so on. As coal is found in layers alternating with layers of rock, frequently shale, such changes in level are believed to have occurred.

The first stage in the slow process of coal formation results in *peat.* This is a rather spongy mass of vegetable matter containing only a little higher percentage of carbon (59 per cent.) than does wood. It is not particularly valuable as fuel, but in some countries, notably in Ireland, it is used extensively.

As time goes on heat and pressure, resulting from the burial of the vegetable matter, leads to the formation of a soft brown coal known as *lignite.* As this contains about 70 per cent. of carbon it is a better fuel than is peat, but is not yet extensively used because we have so much coal of better quality.

Bituminous, or the ordinary soft coal, contains about 82 per cent. of carbon. We use enormous quantities of this coal as we do of the *anthracite,* or hard coal, which has between 91 and 95 per cent. of

carbon. It is this high percentage of carbon that gives anthracite coal its great value.

Distribution and Production.—Although there is some coal in most countries a very few produce the larger part of the world's supply. As has been said, our country ranks first, producing about 40 per cent. of the total. The British Isles rank second and Germany third. China has large deposits of coal, although little is mined. The countries that produce coal most abundantly are the leading industrial countries of the world. Our chief producing coal field, both for bituminous and anthracite coal, is in Pennsylvania. This field is extended southward along the Appalachian Mountains to northern Georgia, where large quantities of coal are mined. West Virginia, Illinois, Michigan, Iowa, Missouri, Kansas, Oklahoma and Texas produce much coal. Comparatively little coal is mined in our western states, and as a result much must be transported by rail to this section of our country. Our output of coal in 1917 was approximately 600,000,000 tons, valued at about $700,000,000 at the mines.

Uses.—Now with the enormous coal supplies which we possess is there any need of conservation? "If all this coal were brought together it would make a great block 272 miles long, 10 miles wide and a mile high." [1] This tremendous amount of coal will last for centuries at our present rate of consumption. *We* therefore have no occasion to feel

[1] Parker, Edith P., "Lessons in Community and National Life." Nov., 1917.

anxious. But real patriotism means that we must think and act not for ourselves alone but for those who are to come after us."

If our coal were used for cooking and for heating buildings only it would last almost indefinitely. It is manufacturing and transportation that make the largest demands. In many great industrial plants coal is consumed night and day throughout the year, and trains and steamships are constantly rushing to and fro with their loads of freight and passengers.

Our per capita consumption of coal in the United States in 1850 was only a little more than one-fourth of a ton; in 1900 it was 2.43 tons, and in 1917 it had arisen to about 6 tons. This shows how rapidly industry and transportation have increased in our country. With continued growth in population there will be a constantly increasing drain upon our coal supplies unless some substitute takes its place.

Waste.—We should continue to use coal. This it is our right to do, but we should not continue to waste it. It is the waste rather than use that occasions concern. Coal varies in quality and the seams of coal vary in thickness. Because of this the poor and thin seams are often unused. If such coal could be mined some time in the future it would not be lost, but much of the rejected material becomes undermined and falls, thus breaking it up. Much coal is ruined because of explosions used for the purpose of decreasing the labor of mining.

In every city a cloud of smoke arises from the smokestacks of mills, factories and locomotives, and

from the chimneys of houses. This means partial combustion of the coal. In other words, coal is going up in smoke instead of being converted into power, heat or light.

In our country alone 250,000 firemen are shoveling coal into locomotives and the furnaces of industrial plants. If too much coal be put upon the fire, or if it be not properly placed, air is in a measure prevented from reaching the fire and there is a waste of coal. In some cases the waste amounts to 50 per cent. It is estimated that 30,000,000 tons of coal are lost annually in our country because of improper firing.

Another source of waste is represented by the fact that as a rule we keep our houses too warm. In very many cases rooms are kept at a temperature of 75° F. instead of 68° F. In the aggregate much coal is lost along our railroad lines because it falls from the cars during transit. Probably 100,000,000 tons of coal are wasted annually in this country. If this is worth $4 per ton, it represents a loss of $400,000,000.

The War and Our Coal Supply.—The European War led to a great demand for war supplies. This resulted in an increase in the amount of coal used. To transport the men and munitions required an enormous amount of coal or oil. About 80 pounds of coal are used in the manufacture of a three-inch shell and millions of these were made.

The situation became so serious that on August 10, 1917, President Wilson was given full power to regulate the coal trade. On the 23d day of the

same month the President appointed Doctor Garfield Fuel Administrator. The policy of Doctor Garfield was "to secure the largest possible production of fuel at prices just to the producer and reasonable to the consumer." A Fuel Administrator was appointed in each state.

One of the principles by which the Fuel Administration is guided is that the railroad and steamship lines must be supplied with coal. Our government was not alone in taking charge of the coal supply. The governments of our allies did the same. In the case of Italy, which has practically no coal, the government imports and distributes the supply.

Conservation.—How can we conserve our coal? How can waste be reduced? Loss at the mines can be reduced by mining *all* of the coal and by using the poorer grades. Low grade coal can be used successfully in the production of electrical energy and in the making of briquettes.

The employment of skilled firemen would mean a very large saving, estimated by experts at $30,000,000 per year. The use of automatic stokers by our great industrial plants would be even better. We are told that if every householder in the United States would save one shovel of coal each day the yearly saving would amount to at least 15,000,000 tons. Here is an opportunity for all to help. Considerable coal can be saved in the homes through the use of "fireless cookers." In areas where there is a high percentage of sunshine, solar heaters will help reduce the consumption of coal. A ton of coal when

converted into gas will yield about four times as much heat as the coal, hence the use of gas heaters saves coal.

Large quantities of coal are used in manufacturing ice in our 5000 ice plants. On the average about 500 pounds of coal are used in making a ton of ice. Many farmers and dairymen who do not harvest natural ice could do so, thus saving much coal. In the smelting of iron ore, coke has in large measure replaced coal. Quantities of coal could be saved in the coke industry if the retort ovens were more extensively used.

An extensive field for conservation is open to us through the use of water power and hydro-electric energy. Millions of horsepower are running to waste in our streams which could be employed in doing work now being done through the use of coal. This subject is treated in Chapter XIII.

In thinking about the future of our coal supply we should not forget that our coal once used is gone forever. Although man can do many wonderful things he cannot make coal. Let us remember also that man has been upon the earth for a very long time, but that he has been using coal extensively for only about a century. There is good reason to believe that human beings will continue to live upon the earth for a period of time impossible to reckon. This shows us that in practicing conservation we must keep in mind the distant future as well as the present.

CHAPTER XVI

OUR MINERAL FUELS—OIL, GAS, GASOLINE

PETROLEUM

PETROLEUM is obtained from the rocks of the earth's crust. The name means "rock oil." It has been known and used for centuries, but not as a fuel. The Babylonians wrapped their dead in cloths saturated with petroleum. In the early history of our country petroleum was used as a medicine.

Both animal and plant life have contributed to the formation of petroleum, the process being that of distillation. When these materials decay on the surface of the earth, the hydrogen and the carbon escape into the air. When the materials are laid down under water these gases are stored.

Distribution.—The United States, Russia, Mexico, Roumania, the East Indies and India are the great producers, our country ranking first. Frequently gas is present and this accounts for the "gushers." The first oil well was struck in Pennsylvania in 1859 and for many years that state ranked first in production.

Uses.—Petroleum is used as a fuel on ships, locomotives and in factories. Great quantities are used in the construction of roads. As a fuel, petroleum is cheaper than coal. Its use makes traveling

more comfortable and when used by locomotives fewer forest fires result.

Conservation.—It is necessary to conserve petroleum because, like coal, it cannot be replaced and because from it are manufactured many very useful commodities. Although there are advantages resulting from its use in locomotives, broadly considered the process probably should not be continued, at least where coal can be obtained. The use of petroleum on roads should be discouraged. Another important reason for conserving petroleum is that from it lubricating oils, absolutely essential to the operation of machinery, are made.

GASOLINE

One of our very important fuels is gasoline, and its use is rapidly increasing. As petroleum is heated various products are given off, gasoline being one of the first. It is carried off in pipes against which cold water flows, thus causing the gasoline to condense. The pipes carry the product to large tanks.

We use about 1,000,000,000 gallons of gasoline in the United States yearly. There are in our country about 5,000,000 automobiles and each year the number is increased. The war has led to an increased demand for automobiles and airships, therefore this increases the demand for gasoline. Trucks and tractors require gasoline in large quantities. Because of the very great number of consumers of gasoline there is much waste.

Conservation.—It is the duty of every driver of an automobile to prevent waste of this very valuable fuel. Any condition leading to the overheating of the engine means needless use of fuel. Proper lubrication is our means of preventing this. Allowing the motor to run when the automobile is stationary is a very common practice and is another source of waste. Here, as elsewhere, it is the habit that counts. If we form the habit of allowing the motor to idle we shall waste much fuel during the course of a year.

In bringing the automobile to a stop the gasoline should be shut off before reaching the desired spot. This saves tires, brakes and fuel. Taking advantage of short as well as long grades will make possible considerable saving of gasoline. The use of distillate in motors is another source of saving. If the average weekly use of gasoline could be decreased *one pint* per auto, the total yearly saving would equal 32,500,000 gallons. If as a result of exercising great care there could be an increased service of one mile per gallon of gasoline on each automobile in the United States the saving in a year would total a large sum. Will you help?

NATURAL GAS

Origin.—Natural gas is the result of the distillation of plants and animals and is therefore associated with petroleum. Artificial gas is made by partially burning coal in the process of coke manufacture.

In many cases the coke alone is saved and the gas permitted to go to waste. Both natural and artificial gas are used as fuel.

Distribution.—Our country ranks first in the production of natural gas. At least 25 states are producers, the chief being West Virginia, Pennsylvania, Ohio, Oklahoma, California, Kansas and New York. Russia, Italy, Canada, the United Kingdom and Hungary are large producers.

Production.—Taken as a whole the production in this country is increasing, but there has been a marked decline in some states and many of the older wells are exhausted. Unless care is exercised our supply will not last long.

Uses.—Natural gas is used in illumination, heating, cooking and in manufacturing. The domestic use is rapidly increasing. In Ohio natural gas was first used in 1838. It came from a water well and was used as a fuel in the residence of Daniel Foster in the town of Findlay. The first town supplied with gas in West Virginia was Wellsbury in 1884. Since 1913 gas has been piped from Taft, California, to Los Angeles, a distance of 107 miles.

Waste.—Immense quantities of gas have been wasted at the wells. In some cases, as in Indiana, the escaping gas has been permitted to burn for years. It is estimated that in Louisiana 70,000,000 cubic feet were wasted daily for a long period. This quantity of gas would illuminate several cities as large as our national capital. In speaking of the

waste of gas in the Whittier-Fullerton district in Southern California the following statement is made: "After many years of neglect, during which billions of cubic feet of natural gas have been wasted, steps were taken in 1915 toward the utilization of such stores of gas as remain." [1]

Owing to leaks in pipes much gas is lost in transmission. Most of this waste can be prevented, as can that at the gas and oil wells. There is much loss of gas in connection with its use as a fuel. In countless cases a larger volume of gas than is necessary is turned on, and gas is left burning when it is not being used. The *habit* of being watchful to see that no gas is being wasted about the house will result in a large saving. Here is another opportunity for every one to help conserve for the present and for the future.

"Conserving our resources is true patriotism. The way to be patriotic in America is not only to love America, but to love the duty that lies nearest to our hand, and know that in performing it we are serving our country."

—President Woodrow Wilson.

[1] "Mineral Resources of the United States." Part II, 1915, p. 983.

TOPICS FOR STUDY

Chapters XV and XVI

Upon what areas and transportation facilities are you dependent for mineral fuels?

What evidences of the waste of mineral fuels have you observed?

How is the setting ahead of our timepieces during the summer related to the saving of fuel?

REFERENCES

Arber, E. A. N.: "The National History of Coal."

Ainsworth, Mitchell C.: "Oil."

Hale, S. A.: "Coal Problem of To-day." *World's Work*, 36: 318 (July, 1918).

"Mineral Resources of the United States." Part II (an annual publication).

Mitchell, Guy: "Billions of Barrels of Oil Locked Up in the Rocks." *National Geographic Magazine*, 33: 195 (Feb., 1918).

Reis, Heinrich: "Economic Geology of the United States." Chapters I and II.

Notz, W.: "World's Coal Conditions During the War." *Journal Political Economy*, 25: 567 (June, 1918).

CHAPTER XVII

THE IRON AGE

If you were asked to choose between a pound of iron and a pound of gold there is no question as to which you would take. A pound of gold is worth about $320. A pound of pig iron is worth approximately one cent. In spite of this comparison iron is our most valuable metal if we value it in proportion to its usefulness.

If for a single day we were deprived of the use of the things which are made of iron and steel, all business would be at a standstill. Agriculture, mining, lumbering, manufacturing and most forms of transportation would cease. This is truly the "Iron Age," and the use that a nation makes of iron and steel is an indication of its progress.

Primitive farmers used wooden plows. They threshed their grain by means of flails, or it was trampled under the feet of animals. The grain was ground between two stones and the bread was baked in a clay oven. As each family produced its own supply of grain, transportation was unnecessary.

To-day plows are made of steel, and on some of our large farms what are known as gang-plows are operated by tractors. Machines sow, harvest and thresh the wheat. On rails of steel, in cars com-

posed in part of iron and steel, it is drawn by engines of steel to mills where there is machinery of the same metal. The bread is baked in steel ovens and much of it is distributed in wagons or auto-trucks into the construction of which iron and steel enter. This is but one illustration of the relation of iron to our food supply.

The relation of iron to the production of clothing is scarcely less important. Only a few generations back our ancestors spun and wove flax and wool by hand and made their garments by hand labor. To-day cotton is cultivated by machinery and much of it is picked by machines. Cotton gins separate the fiber from the seed. The cotton is baled by powerful presses, and in ships made in part of iron and steel it is transported to the mills in our own country and in Europe. In the cotton manufacturing centers noisy machines spin and weave the fiber, and most of the sewing of the present day is done by means of sewing machines.

Let us next consider the part played by iron and steel in the construction of buildings. Even in the case of buildings of wood, iron is a prominent factor. The forest trees are cut by axes and saws of steel. Carts, sleds, donkey-engines and trains all have a share in hauling the logs to the mills. They are cut into timbers, boards, laths and shingles by steel saws and the boards are planed by steel planes.

In the erection of the buildings steel tools are constantly employed. Iron nails fasten the parts

together and locks and hinges are of the same material. Gas and water are distributed by means of iron pipes and the meals are cooked on stoves or ranges of steel.

Without the use of steel it would be impossible to erect the skyscrapers in our cities because lumber would not give sufficient rigidity. Another advantage is found in the fact that the use of the steel decreases the danger from fire. Stairways of steel lead from floor to floor, and steel elevators rapidly transport freight and passengers. Even concrete buildings are in part composed of steel.

The transportation of to-day is based upon iron. There are in the United States approximately 400,000 miles of railroad, including yard-tracks and sidings. The mileage of electric roads is about 50,000. We have then some 900,000 miles of steel rails in use. A locomotive weighs many tons; in some cases more than 100. There are in the United States about 70,000 locomotives. This means an enormous amount of steel. Much steel is used in the construction of railroad bridges.

Until a few years ago all ships were made of wood, but now large numbers are made of steel, and steel is extensively used in the construction of submarines and airships.

The number of automobiles now in use in the United States, not only in the industries but for pleasure, is steadily increasing. In the aggregate,

immense amounts of iron and steel are used in these cars.

In every large city and in many towns there are miles and miles of street railway, and there are many elevated and subway lines. These rails and the cars all require an immense quantity of steel and iron in their construction.

In each of our cities there is one or more newspapers and large numbers of periodicals and books are published in this country. Machinery is employed in the manufacture of paper and the printing presses are made of iron and steel. Most business letters are written on typewriters and steel pens are used in large numbers.

War has made great demands upon our iron deposits. Transportation by land, by sea and through the air has been mentioned. Cannon, machine guns, rifles, revolvers, side-arms and ammunition have required enormous quantities of iron in their manufacture.

It is evident that iron and steel play a very important part in our daily lives. Iron has been in use for thousands of years. History tells us that the Egyptians used iron and its use is spoken of in the Bible. Not until recent years was iron used extensively, however.

How long will our supply of iron continue to meet the demand? There is so much iron in the crust of the earth that the supply would be practically inexhaustible if it were all available. A great

deal of it is in the form of fine particles scattered through the soil and much ore is too impure for use. Iron is seldom found in a pure state and it must therefore be smelted before it can be used. A very high temperature is required for this.

Until the middle of the sixteenth century the heat for smelting was furnished by charcoal, but coke is now generally employed. In the smelting, ore, coke and limestone are put into the blast furnace from the top and the molten metal is drawn off at the bottom. The limestone unites with the impurities to form a flux which is drawn off by itself. The limestone aids in the fusion of the ore also. The molten iron is run into molds forming pig, or cast-iron which is very brittle, or it may go to the converter and be at once made into steel. Cast-iron is brittle because of the large amount of carbon which it contains. In the manufacture of steel much of the carbon is removed.

Until about 1875 most of our steel was made in eastern Pennsylvania on account of the location there of our anthracite coal deposits. With the use of bituminous coal and of coke manufactured from it, the steel industry shifted to the Pittsburgh district.

A few countries control the iron output of the world. The United States, Germany, Great Britain, France, Spain, Austria-Hungary, Sweden and Newfoundland are the leading producers. Brazil and China have large undeveloped resources. A large

part of the total supply of our country is in Minnesota.

Alsace-Lorraine is an area very rich in iron ore, and its value to the Germans during the World War can scarcely be estimated. In 1913 German Lorraine produced 21,000,000 tons out of a total of 28,600,000 tons for the entire German Empire. With Alsace-Lorraine once more in the hands of her rightful owner, France will have a tremendous economic advantage.

Our supply of usable iron ore is by no means inexhaustible. In May, 1908, a conference of the governors of the states was held at the White House. At that time Mr. Andrew Carnegie said that at the rate at which the ore was then being used, the supply in the Lake Superior region would be practically exhausted by 1940. As a matter of fact our per capita use is steadily increasing, as the following table shows:

PER CAPITA USE OF IRON ORE IN THE UNITED STATES

Year.	Pounds.
1820	20
1870	180
1880	313
1890	560
1900	806
1910	1344

Like our mineral fuels, the iron ore once exhausted cannot be replaced. It is therefore our duty to safeguard as much as possible the supply of this useful and necessary metal. China and Brazil

will in the future contribute large amounts and deposits not now known may be discovered. More careful mining will result in some saving and ways of using the poorer grades of ore will probably be discovered. We should use stone and cement wherever possible because we have unlimited supplies of building stone and of cement-making material. Railroad building, which has been so active in the United States, will not expand so rapidly in the future and this will result in a saving of iron. We should save all old or scrap iron in order that it may be reused.

There is much loss of iron and steel because of rusting. Many people leave vehicles, tools and machinery out-of-doors the year around instead of having them housed. A coat of graphite-grease, shellac or paint will prevent rusting. Garden tools should be thoroughly cleaned after each using. Stoves and ranges should occasionally be treated with a preparation that will prevent or at least check rusting. A coat of linseed oil carrying a very small quantity of black paint should be applied to screen doors and windows each year. The proper use of lubricant on machinery, automobiles and other vehicles will prolong the period of use and save money.

TOPICS FOR STUDY

Make a list of the activities in your city or locality which are dependent upon iron.

To what qualities does iron owe its great value?

What evidences of wasteful treatment of iron and steel have you observed?

REFERENCES

CHISHOLM, GEORGE E.: "The Metal Resources of Europe in the British Iron and Steel Trade." *Journal of Geography*, 16: 81 (Nov., 1917).

HOOD, CHRISTOPHER: "Iron and Steel."

"Mineral Resources of the United States." Part I (an annual publication).

REIS: "Economic Geology of the United States." Chapters 15, 16, 17, 19.

SHOWALTER, W. J.: "Industry's Greatest Asset—Steel." *National Geographic Magazine*, 32: 121 (Aug., 1917).

CHAPTER XVIII

THRIFT AS APPLIED TO CLOTHING

For many centuries the question of dress has been of extreme importance. The nature of the materials used and the character or style of the dress vary greatly in different countries. In the colder climates man began in very early times to appropriate to his own use the skins and furs of the animals, as these made serviceable and comfortable garments. The Eskimo of to-day is clothed in this fashion. In the warmer parts of the world grasses and barks were formerly employed, and they are yet used to some extent. As man progressed he learned how to utilize the fibers of certain plants in the manufacture of cloth.

To clothe a family in what is to-day regarded as an adequate manner makes a very large drain upon the earning power of the average parents. The clothing for a family of the present day costs very much more than it did 50 or even 10 years ago. This is due to a number of conditions. The cost of materials has been increased; wages and salaries have advanced, and our desire for costly and beautiful garments is still more important. Some idea of the magnitude of the work of providing clothing for the people of our country may be obtained from the statement that more than 2,000,000 people are

employed in the clothing industry. In addition considerable work is done in almost every home.

A few sensible and simple considerations should guide us in the selection and use of clothing. We should dress comfortably, adapting our dress to the conditions of climate and weather. Again, our clothing should be adapted to our work. Coarse and durable materials should be worn when doing work of such a nature as rapidly to wear or soil garments. We should not be conspicuous because of our dress. Lastly, we should always dress within our means. The habit of buying costly garments simply because some other people do so is very unwise.

Materials Used in Making Clothing.—Long before the beginning of the Christian Era people in the Orient had learned how to convert the snow-white bolls of the cotton plant into garments, and to-day cotton is used more extensively than is any other fiber. Within the bolls are the cotton seeds. Separating the fiber from the seeds by hand labor is a slow and laborious process. It is therefore quite natural that for centuries the price of cotton goods was very high. It was not until 1793, when Eli Whitney invented the cotton gin, that this work could be done by machinery.

Only in the tropical and sub-tropical parts of the world will the cotton plant flourish. A large part of the world's cotton comes from our Southern States. Egypt, Russia, India and Peru are other important cotton growing countries.

Our cotton belt extends from Virginia to Texas, the last-named state being the most important. During very recent years southeastern California has grown considerable cotton. In our country the average yield per acre is about three-quarters of a bale.

For the five-year period ending with 1909 our average annual exportation of cotton was 4,350,000,000 pounds. Since the world depends upon us to so large an extent for this fiber, and since its per capita use is increasing, the conservation of cotton is a matter of much importance.

Probably any large increase in the acreage devoted to cotton growing in the South would mean a shrinkage in the sugar cane acreage. This would not be wise, for, as we have seen, sugar is our leading import. The cotton acreage in California is rapidly increasing and Arizona is making progress also. The yield per acre can probably be increased through more intensive cultivation and better control of the boll weavil.

Wool.—Sheep have been domesticated and their wool used in the manufacture of clothing for many centuries. Its use is much older than that of cotton and it was naturally suggested.

As sheep can be successfully raised where cattle cannot be, they are found in large numbers in rather dry and rugged regions. The United States, Argentina, Spain and Scotland are important sheep-raising areas. Although there are tremendous numbers of sheep in our country, we are importers of wool.

By giving careful attention to breeding there has been an improvement in the quality of the wool and an increase in the yield per sheep. Further improvements along these lines will no doubt be made.

Linen.—At least 5000 years ago linen clothing was made in Egypt and Assyria. The making of linen cloth was important in our country until after the invention of the cotton gin, which, as has been stated, reduced the cost of cotton goods.

Flax, the plant from which linen is made, thrives best in cool, moist climates. Russia grows about one-half of the world's supply. Ireland, Belgium, Holland, France, Italy and Egypt are important. There is a considerable acreage devoted to flax in our country but it is grown for its seed rather than for its fiber. Our linen cloth is therefore imported.

As flax is pulled by hand when grown for fiber, the cost of production is large. In the United States labor is too expensive to justify this work. If cheaper methods of handling the flax are discovered, these will make us more independent economically.

Thread, fine fabrics and laces are made from linen, as are cord, twine and rope. Linseed oil, as a by-product, is very valuable. It is used in paints, in the making of linoleum, and in some parts of Europe as a food.

Silk.—The strongest, as well as the most beautiful and most expensive material used in making clothing is silk. The raw silk is produced by a moth called the silkworm. The material issues from two tiny openings called spinnerets in the head of the

FIG. 11.—ON THE PLAINS FOR WINTER GRAZING

moth, and the threads thus produced may vary from a few hundred to 4000 feet in length. Approximately 3000 silkworms are needed to spin one pound of raw silk, and from one to two pounds are required for an ordinary dress.

The Chinese understood the art of making silk garments centuries before it was known by the people of other countries. In fact, it is recorded that the Chinese did this work 3400 years B.C. In 910 the Moors carried the information to Spain, and in the fourteenth century silk garments became relatively common in France.

The silkworm feeds upon the leaves of the mulberry tree, and as no successful substitute for these leaves has been found the production of raw silk is practically limited to the regions where the mulberry tree grows. France, Italy, China and Japan produce most of the raw silk of commerce.

We import millions of pounds of raw silk yearly and we lead in the manufacture and the use of silk goods. The industry is most important in New Jersey, New York, Pennsylvania and Connecticut. Silkworm culture has been tried in various places in the United States, but because of the high cost of labor it has never been very successful.

Leather.—Civilization had made considerable progress before man learned how to spin and weave. The fashioning of skins into rough garments was a much more simple task. Leather was therefore extensively used in the making of clothing in early days, yet even to-day jackets, trousers, caps and

aprons of leather are worn by men engaged in various occupations.

In the manufacture of gloves and mittens considerable leather is used. Calf, sheep and goat skins are the kinds most generally employed. Gloversville and Johnston, New York, are our chief centers for the manufacture of gloves and mittens. We import large numbers of fine gloves.

It is in the making of boots and shoes that there is the greatest demand for leather so far as clothing is concerned. In the earlier history of our country boots and shoes were not so universally worn as they are to-day. Men frequently dispensed with them while at work and children made little use of footwear during the summer.

Our rapid increase in population and the steady decrease in the number of cattle raised have greatly increased the cost of boots and shoes. Although cowhide and calfskin are the materials chiefly used, other skins are employed to some extent.

Application of Thrift to Clothing.—We all know that "a stitch in time saves nine," but the principle is not always applied. Prompt and careful mending of garments results in material saving. It is not economical to have clothing, towels or table linen become badly soiled, because in many cases chemicals are used in removing the dirt, and this wears out the material more than does use.

Moths do great damage to woolen garments. This can be lessened by the exercise of care when

putting away clothes for the season. They should be thoroughly brushed both inside and out and packed in tar paper, or gum camphor may be packed with them.

More care given to our clothes, no matter of what material made, would result in saving. The use of an apron or of sleeves when at work, no matter how short the period of time, will guard against soiling and staining. Before undertaking a piece of work likely to injure a suit, a man should put on a pair of overalls or a one-piece suit.

Throwing clothes down carelessly results in loss, because they soon become wrinkled and then pressing is necessary. Forms upon which to hang garments are very inexpensive and should always be used. When putting clothes away for some time they should be protected by means of cover bags, or sheets may be pinned around them.

It has now become a duty as well as a necessity to practice thrift as applied to footwear. The life of a shoe can be increased by occasionally oiling it, as this tends to prevent cracking. Wrinkling of the leather leads to cracking. Keeping shoes on forms or trees when not in use will prevent this. Care should be used to avoid wetting the shoes, because this leads to the rotting of the thread as well as to the hardening of the leather. A pair of rubbers carefully used will last for a long time. The use of rubbers is to be recommended from the health standpoint as well as from that of economy.

Frequently shoes with good uppers are thrown away because the soles have worn through. It usually pays to have shoes half-soled. When cracks in uppers first appear an inexpensive and inconspicuous patch will remedy matters.

There are additional reasons for conserving our leather. It is used in very large quantities in the manufacture of carriages, automobiles, trunks, suitcases, handbags, purses, seats for chairs and belts for machinery.

Children should be taught that it is their duty to exercise care in the use of their clothing and to take pride in so doing. Preventing clothing from becoming soiled and torn saves the mother work, saves the family money, and contributes to neatness in personal appearance.

TOPICS FOR STUDY

Give concrete illustrations of the waste of money on clothing.

Show how greater service can be obtained from wearing apparel.

Explain how the school can teach thrift as applied to dress.

REFERENCES

Brooks, Eugene C.: "The Story of the Cotton Plant."
Chamberlain, James F.: "How We Are Clothed."
Hopper, Luther: "Silk: Its Production and Manufacture."
Hunter, J. A.: "Wool."
Kinnie, Helen, and Cooley, Anna: "Shelter and Clothing."
Peake, R. J.: "Cotton."
Stevens, H. P., and Beadle, Clayton: "Rubber."

CHAPTER XIX

THE NATIONAL HEALTH

THE conservation of natural resources is one of the most important lines of human endeavor. We wish to conserve these resources for the benefit of human beings. It is only during recent years that we have given attention to conserving forests and fuel. The conservation of human life is even more recent.

Physical strength and health are at the foundation of our happiness as well as of our usefulness. Our physical energy should be used properly, not wasted or abused. We should use care lest we overtax our strength either in work or in athletics. It is necessary to take sufficient exercise to balance our mental work.

Better health in America means a higher percentage of accomplishment for the average person, a lower death-rate for both infants and adults, and a lengthening of the period of life. Conservation of human beings means thrift. Preventable deaths, due entirely to ignorance, carelessness, or neglect, result in an economic loss impossible to estimate. The suffering in later life from early physical defects and such as are entirely preventable or curable would be measurably lessened under proper care and supervision.

For more than a decade school and health authorities have in many cities and towns coöperated to check downward physical tendencies and to strengthen and repair weaknesses and defects. The coming of the war and the high physical standards set by the drafts brought to light a condition realized by few to exist. Experts and specialists had uttered the warning. We have been told that the percentage of those with poor eyesight was alarmingly on the increase. Frequently 60 to 75 out of every 100 boys and girls were reported to have weakened sight. The number of those wearing glasses, while large, did not compare with the number needing them. We have been told that the hearing of many school children was defective; that there were all too many cases of mouth breathing; that malnutrition was dangerously prevalent. These, and other defects, easily discernible by either teacher or parent, are the results of causes that are in many cases removable. The defects can be partially or entirely remedied.

Richard G. Boone, writing of "Health Conservation" in the *Sierra Educational News* for November, 1918, says:

"It is not far from the actual fact to say that America is in the midst of a health renaissance. During all our years of frontier conditions little attention was given, or could be given, to systematic physical education. Until the middle of the XIX century most of our people lived an outdoor life. The ratio of urban to rural population was small as

compared with the present. Our first awakening came with the revelations of the examinations of the men called into the armies of the Civil War. Physical training introduced into the colleges spread its influence upon the secondary schools and was reënforced by the activities of the W. C. T. U. after the early 70's, mainly for the elementary schools. The best work probably was done here. Poor enough, at best, often; but the emphasis was upon health rather than the exploiting of muscle. Medical inspection and medical care, and preventive associations with varied functions, exalted the social meanings of individual health and vigor; more wholesome conditions in school buildings, open-air sanitation, play and play-grounds, an alteration of sedentary and active school exercises and a recognition of the sound body as a condition of learning.

"It was affirmed that in the elementary schools probably the best health work has been done. But in secondary and higher institutions the work soon degenerated into an exclusive and semi-professional athletic interest. In more schools the few only participated, while the bleachers and observers claimed the many. Stunts, and records, and scores, and contests, and spectacular exhibits held the place of honor. The few were profited in the sports that were staged; the many students and the general public grew enthusiastic over the show.

"Our second awakening came again under the sting of war conditions. As a result of physical

examinations and camp life Americans were rudely made aware that 50 per cent. or more of the enlisted men were physically unfit for military duty. Neither school nor society had followed up the health program to the end that health should be the rule and not the exception; that the striving for physical vigor should be made a habit. The men who have gone to the European war zone are as fine a group of men, perhaps, as ever took arms; but they are picked men. There are other millions just as loyal, as eager for participation, as intelligently patriotic, who are second best only in physical stamina, in endurance, in powers of resistance, in soundness of organs and parts and tissues. Yet it is the judgment of the medical examiners that a very large per cent. of these coming before them might, by intelligent treatment and far-seeing training, have been made and kept physically sound."

Eye Troubles.—Physical handicaps affect not only the individual child but the entire class or group. Boys and girls who are spoken of as slow or dull or lazy or indolent or sullen or indifferent, are so, many times, only because they are not normal, and have no way of knowing it. A child with weak eyesight, with "near" vision or "far" vision, or other eye troubles may, with difficulty, read the printed page. There may be eye-strain of long standing. Having been so handicapped from birth he has no standard of measurement with which he may compare his ability in this regard with that of his fellows.

He does not realize his weakness. Proper attention by an expert oculist and the difficulty may be readily corrected. Or again, the lighting conditions in the room may be injurious to the eyesight. There may be cross-lights, or glaring white walls may be next to glossy black ones. Books may be held improperly, print too small, or desks out of adjustment. The light should come from the left hand preferably, or from overhead, and should be subdued.

Sight is a very important factor in our happiness and usefulness. Using the eyes in close reading while riding on cars is unwise, because of the constantly changing focus. If one begins reading or writing before twilight and continues, one is apt to continue too long without the use of artificial light, as the darkness comes on so gradually that the change is not apparent.

If one finds it difficult to read without glasses, reason and thrift dictate that glasses be at once supplied. It may be a considerable financial burden to do this, but comfort and earning power are both increased thereby.

Defective Hearing.—Many boys and girls do not hear acutely. That others have normal hearing only emphasizes the strain to which they are subjected. A change of seats, a clearer enunciation of voice, the removal of some minor physical defect, and the hearing can be made normal. Only then does the pupil know that his former trouble was caused simply by inability to hear. By watching carefully the

expression upon the face of the pupil the teacher may determine whether the hearing is clear. Sometimes children hesitate to admit they do not hear all that is said and failures result on this account.

The Teeth.—Decaying teeth are the cause, directly or indirectly, of physical weakness and sickness. A properly qualified dentist with assistants and nurses should be attached to the staff of every school system. Imperfect teeth are a decided drawback to personal appearance, and cause great pain. Healthy body conditions are determined in no small degree by sound teeth. Decay soon spreads; food cannot be properly masticated if teeth are affected; digestion is impaired. Pain and expense are spared and dangers averted by careful attention to the teeth in early life.

Defects in the teeth are the cause of many ills and therefore the best care possible should be taken of the teeth. They should be thoroughly brushed twice daily. At least once each year they should be examined by a dentist. A defect does not usually become apparent to us until it has existed for some time. Needed repairs should be made as soon as any marks of decay are discovered.

Child welfare and child hygiene must be given full consideration in the school and in the home. A child two years behind in his grade in school, who for years has breathed through his mouth, whose nasal passages are completely barred, may,

after a brief treatment, regain his standing in a few weeks or months.

It is these physical defects that result in a tremendous economic loss. Such drawbacks make it impossible for children to lead a natural and happy existence, or to make their full contribution either as children or as men and women. In going over the same grade two or more times, these "repeaters" cause a loss in dollars and cents very large in the aggregate.

LIBRARY
STATE NORMAL SCHOOL
MANUAL ARTS AND HOME ECONOMICS
SANTA BARBARA, CALIFORNIA
2399

CHAPTER XX

THE NATIONAL HEALTH, CONCLUDED

It is highly important that food be pure and sufficiently nourishing. Poor cooking is the cause of no little suffering. The pure food laws have done much to improve the quality of various foodstuffs purchased in the markets. Meat, milk, fruits, canned and bottled goods, etc., are inspected. Weights and measures are tested and proper labels are affixed.

Proper Food.—Malnutrition is very noticeable in many children. They are under-nourished. In crowded tenement districts in cities, and especially among our foreign sections, or with the so-called "steamboat populations," the boys and girls suffer for lack of sufficient palatable, body-building foods. The kinds of food eaten may not be adapted to the developing body. Many children in rural districts suffer from this latter condition. Luncheons at school are eaten cold. Worse than this, they are snatched hastily that the time of recess or noon may be given to violent exercise. Too often the lunch consists of sweets only.

In every school there should be opportunity for preparing one or more hot dishes at every lunch hour. In small schools the entire class may come together as a group. This will furnish the best possible

opportunity for a "socialized" recitation. In the larger schools the Domestic Science Department may solve the problem.

An Experiment in Feeding.—Under-nourishment may be due to ignorance of food values or in some cases to financial circumstances. In many homes there is no appreciation of the meaning of a balanced ration or of the necessity for such. An interesting experiment was carried on recently by Miss Katherine D. Blake, Principal of Public School No. 6, New York City, and a member of the National Committee on Thrift Education. Quoting from Miss Blake:[1]

"Ever since the beginning of this terrible war, the gospel of thrift has been preached unceasingly. . . . Three hundred thousand children under five years of age die in this country every year and many of those who survive grow up to enfeebled maturity. The greatest need for thrift is not in pennies, nor sugar, nor any material substance, but in humanity itself. For this reason I took as my work for the year an experiment in feeding a group of children, giving them a balanced meal at lunch-time, cooked by the children of the cooking class. . . .

"The children were weighed at the opening of the experiment in October and have been weighed every two weeks since. It was explained to them at the outset that each meal should be a balanced meal, scientifically prepared so that they would receive the exact amount of nourishment proper for them in

[1] The Conservation of Humanity.

proportion to the other two meals, and that in order to be in a healthy condition all of the luncheon must be eaten. . . .

"The most interesting cases are: A little girl who had had infantile paralysis, and because of her long illness had been permitted to eat as she chose. She has gained 11½ pounds during the year, eats everything, and has even asked for a second helping. A little newsboy who came from a very poor home; he gained 14½ pounds in 6½ months. The normal gain for a child of his age is less than half a pound a month. A little subnormal girl; she gained 6 pounds in 6 months, and grew almost, if not quite, normal. She was placed in a regular class and did the work very well. There has been a marked improvement in the classroom of a number of underweight children. A hungry stomach does not provide an alert brain. . . .

"In order to discover what relation undernourishment bore to poor work in the school we weighed all the children in the school once a month. . . . One thousand one hundred and seventy children were classified and their weight records were compared with their class standing at the end of May. There were 825 pupils rated as normal, 70 per cent. of the school; 345 were under weight, 30 per cent. of the school.

"The under-weights, though forming 30 per cent. of the school, gave but 27 per cent. of the successful pupils at the end of May, yet they provided 43

per cent. of those who had not done satisfactory work. The 70 per cent. of normal children gave but 66 per cent. of the failures. Taking the normal children as a class by themselves, 88 per cent. had done satisfactory work and 12 per cent. had a poor rating, while 22 per cent. of the under-weight children were rated as unsatisfactory. In other words, the underweight child has almost twice as many chances for failure as the normal child."

Fresh Air.—Vitiated air leads to organic weaknesses and disease. Lack of fresh air is a constant menace to health. Few homes, schoolrooms, or offices are properly ventilated. Auditoriums, lecture or study halls, churches and all public meeting places should be amply provided with fresh air. Children become drowsy and stupefied in a close room and where the air is devitalized from lack of oxygen. Especially should sleeping rooms be well ventilated. Out-of-door sleeping porches, even in cold weather, are to be preferred to those indoors, especially for those who are not robust. Sleeping compartments upon cars or steamships should be provided with fresh air at night. If the temperature is too low for comfort, heavier clothing should be provided.

Many people spend nearly all of their working hours indoors and in many cases in rooms in company with numerous other people. Under such conditions there should always be a constant supply of fresh air. Attention is more and more being given to this in public buildings and on the trains. If the

air becomes too heavily charged with carbon dioxide gas mental effort is retarded. More attention is being given to the ventilation of mines, factories, store and schoolrooms than was formerly the case.

There is a tendency on the part of some to wear over-heavy dress on the street or at work. Boys and girls frequently wear heavy sweaters while sitting at their desks in school in warm or poorly ventilated rooms. Such heavy garments should never be worn indoors. Care should always be exercised that the high collars protecting the neck and throat be not worn in the house, nor indeed out of doors, unless in cold or inclement weather. Colds are contracted easily where there are extreme changes in temperature.

In the interest of health we should not work or live in buildings heated to too high a temperature. During the winter in the cold parts of our country buildings are frequently at a temperature of 75° F. or about 7° F. higher than they should be. We work much more effectively in a temperature of 70° than in one of 75°.

Exercise.—With the younger school children especially there should be frequent opportunity for physical exercise. This, if at all possible, should be out of doors. If indoors, the windows should be opened and loose clothing should be worn. That pupils may be perfectly free in their plays, games and sports the feet need particular attention. Shoes either too large or too small are most injurious.

The posture while sitting in the chair or at the desk is a most important matter. Stooping shoulders, cramped chests or eye-strain must be avoided.

Proper Sanitation.—Sanitary conditions in small towns and in country districts frequently need attention. Above all, the water supply must be adequate and perfectly pure. Surface water from wells or water that is contaminated in any way breeds contagion.

The water supply in cities and even in the country is often found to be impure and the cause of sickness and death. Great care is now exercised. Water is filtered. Reservoirs are covered. Water is tested, and if found impure, statements are issued and advice given to filter and boil the water.

In cities piles of rubbish or decaying vegetables or fruits should never be allowed to collect. Stagnant water pools and rubbish dumps are most unsanitary.

The sanitary conditions in cities have now been greatly improved. We have garbage cans and garbage collection. This refuse is either burned in an incinerator or taken far into the adjacent lake or ocean and dumped. Streets are swept and in some cases washed at regular intervals, and the sewers are flushed when the rains are infrequent.

Formerly disease carried off much larger numbers of persons than is now the case. Hygiene and medical and surgical science have accomplished much for the conservation of life. Manila, Habana, Rio

Janiero and other tropical cities have been rendered quite safe for white persons because of discoveries that have led to the successful combating of disease. From the sixteenth to the end of the nineteenth century the span of life among the people of intelligent nations doubled.

Health Supervision—the School Nurse.—There should be in every school system—city, town, county—supervision of health and sanitary conditions. There should be physical examination and medical inspection, but this should be of the common-sense sort. All such defects as pertain to eye, ear, nose, throat, teeth, should be discovered at once by the school physician and reported to the home. The matter should then be left to the parents to choose medical assistance. The teacher should be so instructed by the school physician and school nurses as to readily detect the most glaring defects. Children should be sent home or isolated the moment any question arises as to contagion. The school nurse, by training and experience, should take her place in the community side by side with the librarian and the teacher.

A set of rules for the prevention of Spanish influenza, issuing from the Surgeon General of the U. S. Army, are most suggestive. They may well be followed at all times.

"1. Avoid needless crowding—influenza is a crowd disease.

"2. Smother your coughs and sneezes—others do not want the germs which you would throw away.

"3. Your nose, not your mouth, was made to breathe through—get the habit.

"4. Remember the three C's—a clean mouth, clean skin and clean clothes.

"5. Try to keep cool when you walk and warm when you ride and sleep.

"6. Open the windows—always at home at night; at the office when practicable.

"7. Food will win the war if you give it a chance—help by choosing and chewing your food well.

"8. Your fate may be in your own hands—wash your hands before eating.

"9. Don't let the waste products of digestion accumulate—drink a glass or two of water on getting up.

"10. Don't use a napkin, towel, spoon, fork, glass or cup which has been used by another person and not washed.

"11. Avoid tight clothes, tight shoes, tight gloves—seek to make nature your ally, not your prisoner.

"12. When the air is pure breathe all of it you can—breathe deeply."

Deaths by accident and carelessness are to be reduced. Safety appliances are to-day installed in large manufacturing plants. Buildings are being equipped with fire-escapes and "fire-traps" are condemned and torn down. On railroads the block signal is installed; tracks are patrolled. Temperance is more rigidly enforced than formerly. Machinery

everywhere is inspected, whether on engines, ships or elevators. Hours are shorter. Science, as applied to the wireless, is an important factor in saving life.

The employment of children under the age of 14 years is now in most states prohibited by law. This has been a great factor in the conservation of life. Proposed changes and improvements in our child-labor laws will result in the preventing of exploiting of children in the selfish interests of employers and insure them an education and health.

TOPICS FOR STUDY

1. Observe the boys and girls in your school to ascertain whether the book or printed page is held too close to the eye.

2. Does the light come from both sides in your room? Can shades or curtains not be provided for the right-hand side?

3. Test each pupil as to hearing. If there are those who do not hear readily, change their seats.

4. The school is the place to present lessons on health and sanitation. Does each pupil cleanse his teeth daily? Give a lecture upon the teeth and their care.

5. How many pupils that have come under your observation or instruction have given more than one year to a grade? See if you can determine the cause in each case.

6. Give a lesson on foods and point out the meaning of a balanced ration.

7. Investigate the rooms used by you daily—school-room, study, sleeping room, etc.—to ascertain if they can be properly ventilated.

8. What games and sports do your pupils enjoy daily? Do these plays bring into use the larger, fundamental muscles? Do you engage in sports and physical exercise?

9. Divide the class into groups, and make these responsible in turn for the sanitary condition of the building, yard and surroundings.

REFERENCES

AYERS, LEONARD P., and AYERS, MAY: "Health Work in the Public Schools."
BANCROFT, JESSIE H.: "The Posture of School Children."
BRYANT, LOUISE STEVENS: "School Feeding."
BURKS, FRANCIS WELLERTON, and BURKS, JESSIE D.: "Health and the School."
CHAMBERLAIN, ARTHUR H.: "Standards in Education." Chapter 7, on Physical Training.
CURTIS, HENRY S.: "Education Through Play."
FERGUSON, HARRISON WADER: "A Child's Book of the Teeth."
HOAG, ERNEST BRYANT: "Health Work in the Schools."
MARSHALL, JOHN SAYRE: "Mouth Hygiene."
O'SHEA, M. V., and KELLOGG, J. H.: "Health and Cleanliness."
TERMAN, LEWIS M.: "The Hygiene of the School Child."
TERMAN, LEWIS M.: "The Teacher's Health."

CHAPTER XXI

TIME AS AN ASSET

We regret the loss of property occasioned by fire, storm, flood, and earthquake. We regret the loss of money as a result of poor investments, of the purchase of things which confer no benefit, and of lack of economy and thrift in household affairs. We regret the loss of energy and of water in countless streams, but how little we appreciate the loss of time as the stream of life flows along. How little we deplore the loss of the knowledge, of the pleasure, of the power, of the ability to serve, which the proper use of our time would give.

Time is Capital.—How often we tell what we would do if we had capital, and of the returns we would secure on its investment. Time is our most valuable capital, and we each have all that there is of it. The proper expenditure of time enables us to acquire capital of other kinds. Time properly invested constitutes the most valuable of all investments. Time cannot be recalled. It is therefore of the utmost importance that we so use time as to profit from its use.

Time is Life.—How much money have you? So many dollars. How much land do you own? So many acres. What is your wealth in merchandise, mines, forests, cattle?

How much life is yours? On the average so many years. Time then is more than capital; it is life. We prize material things because they minister to the comfort or the happiness of life. Without life, time in which to use them, these things are of no value.

This day, this hour, this minute is a part of life. It is slipping away. You cannot detain it. You cannot recall it. We live too much in the future. We should as well live in the present. We plan and talk of what we are going to do. We should not neglect to *do now*. The poet spoke truly when he said:

> "He liveth long, who liveth well,
> All else is life but thrown away;
> He liveth longest who can tell,
> Of true things, truly done each day."

Time does not constitute the only measure of life, but it constitutes a very important measure. Many a person who is but 40 years of age, because of wise use of time and good accomplished, may have lived longer than another who has lived 80 years. This is our strongest argument for wise use of time.

Make Time Serve You.—Let us make time serve us well. Let us compel it to do our bidding. Let us use it as we use the lever, the pulley, the inclined plane—to our advantage. There is so much undirected and misdirected effort in the world. So much half-hearted use of time. Such use can yield only half-hearted results. So many are watching, waiting, listening, longing for the signal which shall announce the completion of the work of the day,

instead of being so interested in their work that the signal comes as a complete surprise. You have heard the statement: "The man who watches the clock will always be one of the hands." There is a great measure of truth in this. If you are not sufficiently interested in the interests of your employer to have your mind on the work instead of on the time, you stand little chance of promotion.

How often we think that we are using our time to good advantage when in reality we are not. If you are working hard physically you presently become aware of it. You *feel* the result. You are tired. Are you as a rule conscious of mental effort? At the close of an hour devoted to study or recitation are you conscious that you have been working mentally? Do you ever when reading waken with a start to discover that you do not know what you have been reading? You looked at the words and mentally pronounced them, but you were thinking of something else.

A stream flowing along a slight gradient does comparatively little work. It is relatively wide and shallow and it meanders along cutting a little here and building a little there. A few miles farther on we find the same stream confined to a narrow channel. There are definite signs of energy and the hum of industry. You see the movement of sand, pebbles and stones. The stream but a little while before so lacking in energy now cuts a gorge in the solid rock. Its effort has been *concentrated*. We must learn the value of mental concentration and work with a will when we *do* work. On his death-bed, the Duke

of Buckingham (George Villiers) is said to have written to his friend Doctor Barrow these words: "O what a prodigal I have been of that most valuable of all possessions, Time!"

Promptness.—If you will visit almost any large store or industrial plant you may find a system by means of which each employee registers the time of his arrival at, and his departure from, the plant. One means of insuring proper use of time is to insist upon promptness. We are impatient if the train, the car, the boat does not start on time. Promptness is a quality that should be cultivated by all. Failure to be on time can usually be avoided. As a rule the person who fails to keep an appointment does so because he has not formed the habit of being prompt. Tardiness is not tolerated in business, therefore cultivate the habit of promptness.

Your failure to be exactly on time is not merely *your* loss, but it generally means a loss to others as well. If you are working for some one else, it means a loss to your employer. If you are a teacher, it means a loss to your pupils. Suppose that you are one of a company of 10 persons about to make a trip together and that you are 5 minutes late. In this case 50 minutes instead of 5 have been lost. Be prompt, not because compelled by some outside force, but because a force from within compels you.

Invest Time Wisely.—Time can be used in many different ways; for many different purposes. Each individual should decide how he can best employ his time. Select your work and then so use your time

as to make your work a success. The use which you make of your time will depend in a measure upon your company. It, therefore, is wise to carefully select your associates.

The printed page is our most widespread source of information. It was long ago said: "Of the making of many books there is no end." Do not try to read all of the books. Read books that are known to be of value in order that your reading may be a source of profit and uplift. A very great deal of time is spent in theaters and picture shows. This may be time well spent, or it may be the reverse. If, therefore, you would not waste "that most valuable of all possessions" carefully select the plays which you attend. There is yet another way in which we fritter away life. Much time is spent in conversation that is far from profitable. There is in the world so much that is good and valuable and true; there are daily performed so many deeds of love and bravery and self-sacrifice; there are all about us so many manifestations of the wisdom and the love of the Creator; and there is such need for improvement and progress everywhere that there is no excuse for conversation that is weak, silly and belittling.

If you waste 15 minutes a day you will waste 91 hours per year, or nearly 6 days of 16 hours each. At the same rate you would waste in 10 years more than 56 days of 16 hours each. Think of what you could learn, of the skill that you could acquire, of the service that you could render in this time.

Upon one occasion Benjamin Franklin was invited by the Governor of New York State to call upon him. During the conversation Franklin showed knowledge along so many different lines that the Governor asked him of what college he was a graduate. Franklin replied that he had never attended a college, or a high school even, and that he had spent a couple of years only in the grammar school. He obtained his education by spending his evenings in study.

We should of course distinguish between resting or recreating and wasting time. It is as necessary to play as it is to work. We should all spend time in recreation and play and go into this as heartily as we enter upon our work. Many become discouraged because they are not able to quickly achieve some large result. As a rule great things are not accomplished quickly, but are the result of long continued, persistent, patient effort. Longfellow says:

"The heights by great men, reached and kept,
Were not obtained by sudden flight;
But they, while their companions slept,
Were toiling upward in the night."

TOPICS FOR STUDY

For one week note carefully how people use their time. State the result of your observations.

To what extent have the accomplishments of great men and women been due to wise use of time?

REFERENCES

BENNETT, ARNOLD: "How to Live on Twenty-four Hours a Day."

GRIGGS, HOWARD E.: "The Use of the Margin."

CHAPTER XXII

THE USE AND MISUSE OF MONEY

William Jones, Frank Brown, and Charles Smith went through college together. After finishing their college course they decided to travel. Mr. Jones went to Para, on the Amazon. There he purchased a boat and started on a trip up the river. After several days his boat was capsized and his provisions were lost. Although he had plenty of money he could buy none of the needed things, for he was in a dense forest far from the habitation of white men.

Mr. Brown joined an expedition to the interior of Greenland. Upon reaching the coast of that northern land the ship was left and the men set out on sledges drawn by dogs. Day after day they traveled over the wide expanse of snow, unbroken by a tree or vegetation of any kind. Not a human being, other than the members of their own party, was seen. How the men longed for news from home, but not all of the money in their possession enabled them to buy a daily paper, for there was no such thing in that land of snow and ice.

Being greatly interested in desert conditions, Mr. Smith went to the northern coast of Africa, where he joined a caravan, bound for an oasis far

in the interior. For many days they rode their camels over the blistering sands. Not a cloud dimmed the glare of the sunshine. In a sand storm the trail was lost and the water supply became exhausted. Every member of the party suffered more or less because of this. They would have given a large sum of money for a drink of water, yet a millionaire could not have purchased a drop. Just in time to save their lives, a spring was found.

It is evident that under certain conditions money has no value; in and of itself it is valueless. Money is valuable because of the many needs and desires that it usually enables us to satisfy. One may have money and yet be ill, unhappy, and without friends. It is very important that we recognize this.

Why We Need Money.—Mr. White works in a shoe factory in Lynn, Massachusetts. He is helping to produce a commodity greatly needed by the millions of people in our country. If his entire time is to be devoted to work at this industry, he cannot provide himself with food or clothing, nor can he build a house in which to live. Under conditions such as existed formerly, his ancestors, like our own, did all of these things. They were independent, self-supporting. If they needed something which they did not produce for themselves, they obtained this through barter.

Division of labor means that each one of us will work along some particular line. Because of this we depend upon many other persons to supply our daily

needs. The value of our daily labor is usually more than sufficient to support us, but in most cases it has not been used to produce the things that we need. It is not convenient to meet personally the people who produce the commodities that we desire, and they would not always want just the things that we would have to dispose of nor would they necessarily need our labor.

There must therefore be a medium of exchange, and we all accept money as this medium. We accept this for our services because with it we can procure food, clothing, and many other necessities or luxuries. For the same reason the farmer accepts it in payment for his crops, the mine owner for his coal, the lumberman for his lumber, the fisherman for his catch of fish.

Nature of Money.—You are familiar with gold, silver and paper money or currency, but any material would do as a medium of exchange if accepted by all. The American Indians used shells which they called wampum. In colonial days the people of New England often used codfish as money. In New York in early times bear skins were used; in Pennsylvania wheat, and in Virginia tobacco.

The Earning of Money.—In so far as possible each individual should support himself. Therefore every individual who is able to do so should earn money. Only those who earn money appreciate its value. Difference of opinion as to the earning power

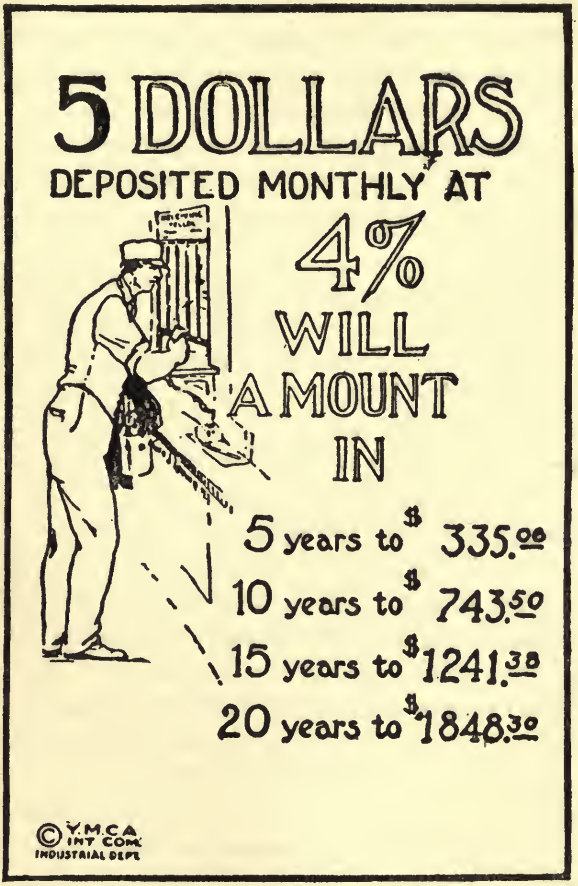
of individuals is the cause of a great deal of discontent, and discord between laborers and those who employ them.

Saving Money.—A few days after a heavy rain the soil in one field will be quite dry, while that in an adjacent field contains an abundance of water. In the first case the soil is loose and does not store up (save) water but allows it to seep through. In the second case the soil contains much clay. This stores the water.

Many people who earn considerable sums of money are poor. In most cases this is due to lack of saving. Saving is fully as important as earning. No matter how little one earns, he should spend a little less, because there will come a time when he will be unable to earn. When such a time does come, the person who has spent money as fast as he has earned it will have to rely upon some one or upon the State for his support. In speaking of the importance of saving money, Abraham Lincoln said: "Teach economy. That is one of the first and highest virtues; it begins with saving money."

Let us suppose that an individual can through the exercise of reasonable economy save $5 per month for a period of 20 years. At the expiration of that time he will have saved $1200, a very considerable sum. Thrift demands that he do more than this. Let him place the $5 monthly in a savings bank, in building and loan stock, in thrift stamps, or in some similar investment yielding 4 per cent. interest. Find

what his capital would amount to at the expiration of 20 years.



In 1916 the number of independent depositors in our savings banks was 11,148,392, or about one-

ninth of our total population. The average amount of the deposits per capita was $7.61, and this is about what it has averaged for the 10 years preceding 1916. Although we earn more than do the people in European countries, our living expenses are greater and fewer of us deposit money in savings banks. The following table, representing conditions as they were before the opening of the war, will make this clear.

NUMBER OF SAVINGS BANK DEPOSITORS PER 1000 POPULATION (PREVIOUS TO 1914).

Country	Depositors
United States	108
Italy	288
England	302
Germany	317
France	346
Sweden	386
Belgium	397
Switzerland	544

Waste of Money.—Even in this favored land of ours poverty is all too prevalent. This is due to a number of causes. A very common cause is waste in some form or forms. If you will place a pail under a hydrant from which water is dropping very slowly and observe the pail after 24 hours you will be surprised to find so much water in it. In the course of a year a large amount of water would be thus lost.

This truth applies with great force to our expenditure of money. Many people think that five cents

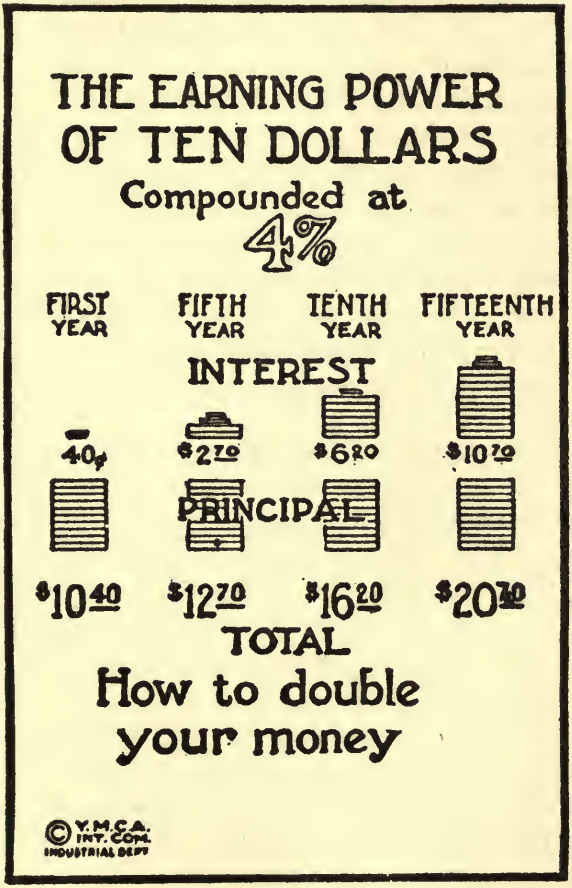
here, ten cents there, or twenty-five cents in another place are matters too small to be considered. Those who take this view may be sure that they do so because they have formed the habit of disregarding small things. This is the point of the whole matter. If it is your *habit* to waste small amounts you will be careless of larger ones. In fact, you will not be likely to *have* large sums.

Two men work at the same trade or profession, earn the same amount of money, and have the same number of persons in their families. One family has the necessities and some of the luxuries of life. The other family is always on the verge of poverty. In the first instance, expenses are carefully guarded, and a little money is saved each month. In the second instance money is expended carelessly and with little thought. Nothing is saved.

What constitutes waste of money? In general, we may say that spending money for that which confers no benefit, that brings no return, is a waste. The spending of money for that which results in real pleasure is not waste, for pleasure is a necessity. For example, a poor man is justified in taking his family to witness an uplifting play, to a concert, for a day's outing, because recreation is absolutely needed by all.

The Cost of Liquor.—Suppose that a young man begins to use liquor at the age of 21 years, and that he buys on the average one glass of liquor daily. At 10 cents per glass this represents an expenditure

of $36.50 per year. At the age of 50 years this man will have spent $1058.50 for liquor.



One thousand dollars would no doubt seem like a large sum to this individual, yet he has wasted

more than this amount, and he has more than wasted it. More than the $1000 has been wasted, for had the money been placed at interest the sum total would greatly exceed the amount expended. The money has been worse than wasted because the liquor was a detriment to him, physically and mentally.

For more than 10 years past the peoples of the United States have used on the average about 20 gallons of liquor per capita yearly, or nearly one glass per capita daily. The whole value of the liquor made in the United States annually was more than $1,000-000,000. There were more than 7000 establishments where liquor was manufactured and the amount of money paid to the workers exceeded $50,000,000 yearly.

Tobacco.—More than $600,000,000 worth of tobacco is manufactured in our country yearly. The use of tobacco is usually begun earlier in life than is that of liquor. Many men spend more than 10, 20 or 50 cents per day on tobacco. We should not here confuse the use of liquor and tobacco with the question of its effect on character. We are considering use and misuse of money only.

There are many other ways in which money is unwisely spent. Large amounts are annually spent for chewing gum, soda and soft drinks, candy and toys, and cheap finery. Children should have toys, but in many cases they have so many that they cannot enjoy them all, nor do they appreciate them. The making of toys by the children is of benefit to

them. It gives a training in doing things, which is enjoyed and is valuable. The toys thus made are appreciated and the work furnishes a very practical application of thrift.

TOPICS FOR STUDY

For one week note carefully how people spend money, and state the result of your observations.

Why do so many people live beyond their means?

How can children be taught the value of money?

REFERENCES

FOWLER, N. C.: "How to Save Money."

KIRKPATRICK, E. A.: "The Use of Money."

PRICHARD AND TARKINGTON: "Stories of Thrift."

STRAUS, S. W.: "The Greater Thrift." Addresses and Proceedings of the National Education Association, 1916, p. 274.

ATWOOD, ALBERT W.: "How to Get Ahead." Particularly Chapters II and III.

COLLINS, A. FREDERICK: "Money Making for Boys." Especially Chapter XII.

ROBINSON, EDWARD L.: "One Hundred Years of Savings Banking." Published by American Bankers' Association, 1917.

HAYWOOD, WILLIAM R.: "Money."

CHAPTER XXIII

THE USE OF PUBLIC PROPERTY

It is a source of extreme satisfaction that in the United States education is free to all. One may receive instruction from the kindergarten to the university, inclusive, without the payment of any tuition. The buildings are heated, lighted, ventilated, and supplied with water as satisfactorily as are our homes. In many schools there are works of art, excellent libraries and the most approved equipment. These advantages are freely offered to all, whether native or foreign born.

Now what is meant by *free* education? Buildings cannot be erected and equipped without cost. Salaries are paid to teachers. Building sites must be purchased. School property is but one of several classes of public property; property for which every taxpayer helps to pay. Instead of paying tuition we pay taxes, a part of which the State uses for the maintenance of schools. So far as the taxpayer is concerned, education is not free any more than is bread or meat.

One of the many obligations resting upon the teacher is that of giving pupils and students a proper conception of their duty with respect to the treatment of school and other property. Teachers are the

guardians of school property and should earnestly strive to prevent waste.

The Use of Books.—Carelessness is frequently shown in the use of books, and large numbers are rebound or discarded long before it should be necessary to do so. Children are not responsible for all of this wear and waste by any means. In every school and public library there are books that have been soiled and mutilated by adults, many of whom write marginal notes to indicate their opinion of this or that statement. If there can be developed on the part of pupils in the elementary schools the habit of using books properly they will, as adults, be careful in their use of books.

Teach children to exercise care in the opening of large books such as the dictionary and other reference volumes, and to avoid opening any book so far as to break the glue and pull out the stitches. The dropping of books, which can in nearly all cases be avoided, results in damage. Leaves are frequently torn because of the careless turning of them. Have on hand a spool of transparent adhesive tape with which to repair leaves as soon as torn. Children should be taught that it is an offense to place a soiled book before a person. They should be encouraged to take pride in keeping clean their own books and those belonging to the school.

Globes and Maps.—Every school building should be supplied with maps and a globe. These should be used much more extensively than they are, but

they should be used carefully. Children, as well as many adults, when using maps and globes have the habit of holding pencils in their hands. Numerous marks and blots are the inevitable result of this practice. In drawing down for use a map or chart that is fastened on the wall, it is often grasped by one corner instead of by the ring in the middle of the rod. This will in time result in tearing the map from the rod. When the map is released it is frequently done in such a way as to damage it. It is absolutely necessary to give instruction regarding the study of maps, and in this connection there is an excellent opportunity for telling of their use from the mechanical point of view.

Furniture.—Desks, chairs and tables usually suffer more than necessary wear. Pencil markings come to be transformed into deep grooves. Ink blots are by no means a rarity, and even the occasional high school and college student defaces furniture by means of sketches.

Minor Equipment.—Lessons should be given on the manufacture of pens, ink, pencils, paper and crayon, and in this connection their conservation should receive attention. Great numbers of pens are ruined by being stuck into the tops of desks and arms of chairs. Explain why wiping the pen after using it will insure longer service.

Teach the pupils to keep the ink-wells closed, thus avoiding the unnecessary collecting of dust or other

material and the evaporation of the ink. This means the saving of both ink and time.

A large part of the average pencil is wasted. This is due to careless usage, to sharpening and to the inconvenience of writing with the pencil when it is short. The use of pencil-holders would save hundreds of thousands of pencils yearly. Every room should be supplied with a pencil sharpener. These save not only pencils but hours of time in the course of a year.

The increased cost of paper means that we should exercise more care than ever before in its use. In all school work both sides of the paper should be used. The size of the paper should be adapted to the amount and character of the work to be done. The used paper saved by school children is of much value. We should in peace times continue the practice of paper saving, which the war made necessary.

Crayon is of course easily broken, and there is a temptation to discard the short pieces because they are not convenient to handle. By securing the coöperation of the children much of the breakage can be avoided, and the small pieces will be used.

Windows and Floors.—If pupils are permitted to raise and lower the windows they should be taught how to do this. It is just as easy to do it in the right as in the wrong way, and careless handling occasionally results in breakage. Certain windows should be protected by wire screening. The exercise of

thought on the playground will reduce the breaking of windows to the minimum.

When children are shown that ink stains cannot be removed from a floor by scrubbing and that planing is the only remedy, they will not be so likely to shake their pens over the floor to rid them of ink as they otherwise would be. Keep wire mat at each door. The habit of using the mat will help wonderfully in keeping schoolroom floors clean.

School Grounds.—There is some opportunity for the exercise of conservation on the school grounds. Let us urge the children to help save lumber, labor and money by taking care of the fences, sheds and other buildings. If there are shade trees on the grounds, enlist the interest and coöperation of the pupils in their protection, and in that of the grass and flowers.

A report on the condition of the school property made by the pupils at stated intervals would be beneficial. Teach the children that in saving school property they are being truly patriotic, are saving money for their parents and are acquiring a habit which will be invaluable to them all through life. The small saving made by each child when multiplied by millions results in a large total. Most of the damage is done thoughtlessly; but a part of the teacher's work is to train in thoughtfulness, to lead the individual to think before speaking or acting.

At luncheon hour or before or after school care should be taken that portions of luncheons are not

strewn about the grounds. Anything unusable may be thrown in garbage cans, but otherwise good and wholesome food, bread, meat, cake, fruits and the like should be returned to the lunch basket and taken home. This lesson in food conservation, if taught in the school, will soon pervade the home and have a salutary effect upon the community.

Papers, string, boxes and other refuse must not be left to blow about the school premises. Anything that can be used or sold as junk should be collected and stored. The waste materials should be burned.

TOPICS FOR STUDY

Make a study of your own school to the end that you may discover whether or not you have opportunity for further conservation.

APPENDIX

Thrift Essay Contest

Elementary Circular No. 11—1916–1917

Department of Education
The City of New York
OFFICE OF THE CITY SUPERINTENDENT OF SCHOOLS
500 Park Avenue

Feb. 5, 1917.

To all Principals of Elementary Schools, Truant and Probationary Schools and Vocational Schools:

Ladies and Gentlemen:

The American Society for Thrift has offered to the pupils of the public elementary schools of The City of New York, the sum of One Thousand Dollars ($1,000) in cash prizes, to be awarded to those pupils who write the best essays on the subject of "Thrift."

These prizes are to be distributed as follows:

To Elementary Schools
(not to include those below the 6th year grade)

Twenty first prizes of $10 each	$200.00
Forty second prizes of $8 each	320.00
Ninety-six third prizes of $5 each	480.00
Total for elementary schools—156 prizes,	$1,000.00

The Board of Education has accepted the offer and the contest will be conducted under the following regulations:

1. The prize essay competition on the subject "Thrift" will be conducted on some day in the month of March, 1917, in each school throughout the city. The time for writing the essay may be taken from the time allotted to English study and Recitation on that day.

2. These essays should be written by the entire class and should contain not less than 300 or more than 600 words.
3. The contest is open to pupils of the elementary, vocational, truant, and probationary schools, above the 5B grade.
4. The essays are to be written in the presence of a teacher and on paper about ten or eleven inches long by seven or eight inches wide. The essays when written in class shall be numbered consecutively to correspond to the number of pupils participating. The name of the writer should not appear on the essay, but the teacher should keep on a private list the names of the pupils corresponding with the numbers on the essays. When the essays are forwarded to the Committee on Award, the number and the name of the school and borough should be written plainly on the essay selected for the school and the sheets should be securely fastened together.
5. In each school the class teacher will select one essay from the number written by the class and then a committtee composed of the principal (or teacher in charge) and two of his teachers (in schools of less than two teachers. the teacher in charge) will select the best essay from those of all classes and forward it to the office of the City Superintendent of Schools, to be turned over to the Committee on Award of the American Society for Thrift.
6. Principals should send, without delay, to the American Society for Thrift for a supply of literature on the subject of "Thrift." It will be sent free and should be distributed promptly to the pupils.
7. On receipt of this circular letter, principals will please to announce to all the pupils in their schools, above the 5B grade, that this contest will take place in the month of March.

AN OUTLINE OF A METHOD BY WHICH THE PRINCIPLES OF THRIFT MAY BE TAUGHT IN OUR PUBLIC SCHOOLS[1]

By Teresa M. Lenney,
Seventh Grade Teacher, Trinity Place School,
New Rochelle, N. Y.

Outline of Method

Introduction.—Since courses of study vary in different localities, it is impossible to make a definite outline. The following, however, is elastic enough to fit practically any school whether urban or rural. The word "thrift" is fast becoming one of the catch words of the times, so it will be comparatively easy to interest teachers, children, and parents in all that pertains to it. This makes a workable outline, because, in school, thrift really means connecting things with real life. A little thought will make this matter clear. In moral education, for instance (and most teachers give some time to ethics these days), many of the topics discussed are of necessity elements of thrift. This is also true of many of our other subjects.

The following plan, then, is merely suggestive.

Moral Education.—Many teachers present each month a thought on ethics, by means of quotations,

[1] This outline was part of the "Thrift" essay which won the first prize of $750 in the contest given by the National Education Association and the American Society for Thrift in 1915–1916.

stories, and poems. Most of these topics are directly or indirectly associated with thrift, as:

Courtesy; kindness; obedience; truthfulness; generosity; dependability; concentration; self-control; self-denial, which is the foundation of generosity; punctuality; honesty; earnestness; loyalty; courage; prudence.

Good habits are as easily formed as bad, and pupils should learn to live for the highest purposes and with the highest aims in view.

Arithmetic.—Principles of thrift to be emphasized are: In grades three and four, accuracy, which implies truthfulness; in grades five and six, accuracy and compensation; in grades seven and eight, accuracy, compensation, and investment.

The topics of arithmetic that will develop thrift are:

All fundamental operations and combinations; storekeeping; bills, receipts, checks, etc.; how to keep home accounts; materials bought for real and imaginary class parties; recipes for lemonade, candy, etc.; cost and price as regulated by supply and demand; estimates on house and lot values; also on vacant lots and the building of houses; wage scales—skilled and unskilled labor. Wages of expert mechanics, machinists, or even of expert janitors compared with salaries of clerks and salesmen; early choice of occupation should be encouraged; interest, wages earned by one's savings; profit and loss, figured to cover rent, transportation of goods, interest on investment, risk taken, wages, etc.; trade discounts, and reasons therefor. Percentages off for cash. Real catalogs with list prices; comparison of investments, which is better, etc.? Why government or city bonds, or first mortgages are safer investments than even preferred stock; insurance—property and

life. Men with families should protect them by insurance; local taxes—problems supplied by local tax department; banking—through earlier grades, this means merely the learning of the how and why of depositing, withdrawing, etc. In the upper grammar grades, the simple elements of banking, and compound interest as computed in savings banks should be taught.

If the city's computation of expenses, taxes, etc., could only be done in the schoolroom, it would save, not only salaries of employes, but the teacher's time, looking for less practical problems.

English.—This is the broadest of all subjects, and is perhaps richest in its opportunities for teaching thrift. Many principles of thrift will be suggested, from time to time, but the simple one of industry should be emphasized throughout the course. The study of English subdivides itself into spelling; literature, which includes reading of all kinds; memory poems, and quotations; composition, which includes story-telling and dramatization in the lower grades, and both oral and written composition, and letter-writing in all grades; and grammar, which includes corrective drills in lower grades, and technical grammar in the upper grades. Each of these branches lends itself to the teaching of thrift, if only to supply motive, as is the case with spelling and grammar. Many a good position might have been secured but for a mistake in spelling or grammar.

Reading material is full of suggestions to bring out the idea of industry and other thrifty habits. Memory poems and quotations, suitable for children

of any age, are easily available, and only lack of space prevents the recording here of a long list. In story-telling and composition are endless opportunities. Such fables as "The Crow and the Pitcher"; "The Farmer and the Wheat"; "The Ant and the Grasshopper," and many others may be used. Stories and compositions on the life and work of the birds, the bees, the ants, the spider, the beaver, and many other animals furnish excellent examples, both of coöperative and individual industry. Letter-writing may bring out this and other desirable qualities. Letters ordering supplies for the school, or acknowledging receipt of goods, books, etc., could and should be written by the pupils, and one of the best chosen and actually sent. The joy of signing a real letter and adding "for the principal" is often a true and lasting incentive.

Geography.—The main thought that is connected with thrift, in this subject, is, of course, conservation, and this point should be emphasized all along the line, and frequently connected with home and even individual conservation. Unused lands should suggest the use of vacant lots, or of vacant spaces in and near the home. This brings in gardening, and suggests the thrifty plan of beautifying a back yard with a combination vegetable and flower garden, instead of using it as a repository for tin cans and other rubbish. Conservation in forestry suggests the observation of Arbor Day. Similar plans may be carried out in regard to streams, animals, birds, and mines.

The topography of a locality suggests the comparative value of industries and occupations. Growth of cities depends on occupation. Domestic and foreign commerce, as well as transportation and trade routes, are rich in suggestions of the principles of thrift.

History and Civics.—These subjects furnish excellent opportunities for teaching coöperation. Biography, whether taught in connection with history or with English, furnishes many concrete examples of how success is won in spite of adverse circumstances, because of coöperation, industry, concentration, and perseverence.

Hygiene.—This subject is really health-conservation and it suggests cleanliness; sanitation; care of teeth; home-ventilation; proper breathing; abundant use of pure water; avoidance of tea, etc.; Babcock Test for milk; bacteria; care of the sick and of the sick room; emergencies; food values; narcotics and alcohol. These topics should bring out the double cost—the price paid in money and in depleted physical power.

Sewing.—Repairing, mending, darning, renovating passé garments; selection of fabrics; proper knowledge of materials and dyes; making new garments; use of patterns.

Cooking.—Teach children how to market by actually taking them to markets. Teach also tests for fresh foods and the proper care of milk, butter, eggs, meat, fish, etc.; economy of buying cheap cuts of good meat, especially where the income is limited

(sometimes a soup bone has as much nourishment as a steak); cost of food ingredients.

Manual Training.—This subject, as it is generally taught, is craft work, and corresponds in scope to the teaching to girls embroidery and the making of real lace. It is excellent as far as it goes, but might be made far more practical. Why should not the repairing of the building, the making of cupboards, and the laying of floors, etc., be done by the students? Trade schools should coöperate with local industries and the boys trained in them should be prepared for good positions when they have finished.

In schools where the above is impracticable, thrift may be taught in a more general way by emphasizing one of its principles each month, for instance:

September—Punctuality.
October—Taste and economy in indoor decoration.
November—Harvest.
December—Charity.
January—Health.
February—Kindness to animals, feeding birds, etc.
March—Pride in home, and civic cleanliness.
April—Economy of Mother Nature.
May—Gardening.
June—Dependability.

The study of thrift may be continued in the high school by means of debates, essay contests, and prizes offered for reading books on the subject.

One great waste of energy in most high schools is that spent in competitive athletics. We overdevelop the "nine," the "eleven," and the "five" at

the expense of the many. If a system of athletics could be arranged that would appeal to all, and give opportunities to all, a great advance step would be taken. "Rooting" certainly does develop school spirit, loyalty, and coöperation, but as exercise its value is, at least, questionable.

A Thrift Survey [2]

Superintendent Aaron Palmer of the Marshalltown, Iowa, schools, attempted to ascertain what significance the term "thrift" had in the minds of the boys and girls of the High School and upper grammar grades. A questionnaire of rather wide scope was submitted recently by Mr. Palmer as follows:

QUESTIONNAIRE

1. Did you work for wages or earn money in any way during the summer vacation of 1917?

2. If so, what was your employment? What were your hours of work?

3. Wage per day? Approximate entire amount earned?

4. Have you a bank account? Give the amount as near as you can remember.

5. Did you start your bank account with money you yourself earned?

6. Are you earning wages now during your school attendance? If so, how much per week?

7. Is the work you were or are doing your choice of a permanent occupation? If not, state your choice.

8. Are you saving some money from either wages or allowance?

[2] From summaries and reports appearing in the *Journal of Education,* Jan. 3, 1918; and *American School Board Journal,* Dec., 1917.

The survey included about 600 students, exclusive of post-graduates, who were present on the day the questionnaires were presented. The net earnings were $15,561.88 for the vacation period of 1917 and represent a very conservative reckoning from the data received. A significant feature is that the boys and girls were willing to undertake any serivce, no matter how menial or how strenuous, in order that they might continue their education. It is noted that a large part of the student's earnings is spent in the purchase of equipment for the school year, but despite this, 347 boys and girls have bank accounts and 209 report that they started with money they earned. A considerable per cent. had bank accounts started for them before they began to earn for themselves.

The report by grades was as follows:

"In Grade VIII, of 61 boys, 48 earned money in vacation, and of 74 girls, 14 earned money in vacation. The 62 boys and girls earned $1360, an average of $22. The 48 boys had $1430 in the bank, and the 14 girls $928.

"In Grade IX, of 71 boys, 63 were wage earners, and of 83 girls, 22 were earning money in vacation. The 85 boys and girls earned $2806, an average of $33. The 63 boys had $3473 in the bank, and the 22 girls $927.

"In Grade X, of the 47 boys 43, and of the 62 girls 22 were vacation earners, and the 65 earned

$3272, an average of $50. The 43 boys had $3058 in the bank, and the 22 girls $1778.

"In Grade XI, of 48 boys 45 were wage earners in vacation, and of 66 girls 17 were earners in vacation. The 62 boys and girls earned $3184, an average of $50. The 45 boys had a bank account of $16,532, and the 17 girls $2738.

"In Grade XII, of 38 boys, 33 were vacation earners, and of 48 girls 26 were wage earners. The 59 earned $2869, an average of $47. The 33 boys had $3051 in the bank, and 26 girls had $1187.

"In the vacation of 1917 the boys earned $13,448, and the girls $2113. The boys had $27,545 in the bank, and the girls $7605.

"The largest individual earnings were about $200, although a number of the boys reported from $125 to $150 as net earnings from employment in shops and on farms. The greater per cent. of workers were on farms.

"The wage-earners were auto repairers, apple pickers, berry pickers, berry weeders, berry craters, bootblacks, brush cutters in Minnesota, barbers, boiler makers, bolt threaders, burro driver in Colorado, bookbinder, café waiters, clothing clerks, cabbage planters, core makers, cocoon gatherers, children caretakers, cement mixers, cashiers, collectors, cow milkers and drivers, companions to elderly people, carpenters, book coverers, callers for railroad companies, deliverers, druggists, drivers, express helpers, engine wipers, farmers, florists, foundry

helpers, fancy work makers, furnace company helpers, folders, fish peddlers, grocery clerks, gardeners, garage helpers, housemaids, haulers of dirt, harvesting in Canada, hardware clerks, insurance office helpers, jewelers, laborers, laundresses, lawn mowers, lumber yard helpers, machinists, moulders, motor cycle repairers, milliners, meter readers, stenographers, oil station operators, photographers, caretakers of popcorn stands, printers, paper deliverers and sellers, plumbers, rabbit raisers, sheet metal workers, soda fountain operators, school census takers, shipping clerks, surveyors, seamstresses, schoolhouse cleaner (rural), telephone operators, threshers, timekeepers, teachers of violin, teachers of piano, workers in tile factory, tatting makers, tailors, wood corders, welders, weed cutters, waitresses. In almost no instance did the student pursue a line of work which he would choose to make a permanent occupation, and in all cases the boys and girls seem happy to return to educational activities and undertake them with renewed zeal.

"It is shown that, exclusive of the 333 pupils who received wages, many reported that they worked for their parents and received no definite remuneration for their services. Those who could report no financial returns for their labor insisted that the summer was nevertheless profitably spent.

"The number who at present have definite weekly earnings during school attendance is 145. A number of students are employed as janitors, caretakers, paper carriers, telephone operators and

clerks after school hours and some are looking for Saturday work. Some students are earning about $3.13 weekly during school attendance, while a number report that the school day is too full of activities to permit of regular employment outside of routine home duties. Although wage earning has practically been suspended in the case of many students, 246 report that they are saving money now from either wages or allowances.

"It is planned to use the records of the students as studies in vocational guidance and as a means of placing boys and girls in suitable employments."

Salesmanship and Thrift [3]

"'First of all,' said Jimmy's father, 'he has learned the value of money; already he has saved some sixty dollars out of his profits. He has found that it pays to be courteous and persistent—I mean, politely persistent. He keeps his own set of books upstairs and he knows to a cent just how he stands; you know how employers value accuracy of that kind. But most important of all, from a business standpoint, he is learning how to persuade people to buy by explaining the superiority of his goods. That is *salesmanship,* and it's what employers want.' . . .

"Jimmy goes to school five days a week. Monday, Tuesday and Wednesday afternoons he skates, plays baseball or football, or goes swimming, according to the season. Thursday he receives his copies of

[3] From "Salesmanship—A Vocation for Boys," by the Curtis Publishing Co., Philadelphia, Penna.

the Curtis publications and looks over their contents with his father, deciding which articles will appeal to his prospects. Before school he delivers copies to some of his near-by customers. Thursday afternoon he serves the others. Friday afternoon he takes what are left of his copies and goes on a hunt for new customers. Saturday he reckons up his profits and sends his order to Philadelphia for his next week's copies. Monday he puts his profits, less his remittance to Philadelphia, in the Savings Fund and Monday afternoon he is off again with 'the fellows.' . . .

"Thus the boys who sell the Curtis publications are taught how to buy goods and sell them at a profit; how to conduct sales 'campaigns,' and how to execute sales plans. They are taught how to keep books accurately, for the boy's home account must agree with his account with the Publishers. They are taught how to write business letters and how to give intelligent attention to those they receive. In short, they are given the very same experience that most boys spend a year or more in acquiring after they are put on the pay-roll."

REPORT CARD USED IN SCHOOLS OF MONTEREY COMPANY, CALIFORNIA (GEORGE SCHULTZBERG, SUPT.) INCLUDES THRIFT AND HOME PROJECT WORK

HOME PROJECT (OPTIONAL)

Every pupil should be encouraged to carry out some project. Credit will be allowed for satisfactory work.

Suggested list of projects—Raising his own chickens,

pigs, sheep, rabbits, pigeons, etc.; bee culture, making vegetable gardens; raising a patch of beans, corn, beets, wheat, barley, etc.; building chicken coops, shed, etc.; learning to sew, making own dress, doll's clothes, music lessons, etc.; Boy Scout activities or Campfire Girls.

PROJECT	About How Many Hours			
	First Quar.	Second Quar.	Third Quar.	Fourth Quar.

THRIFT (Optional)

Systematic saving should be encouraged until it becomes a habit. Save toward some definite purpose. Credit will be given for satisfactory results.

	CENTS SAVED PER WEEK			
Weeks	First Quar.	Second Quar.	Third Quar.	Fourth Quar.
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
Total				

Blank for Thrift Savings

Name..... Month and Year.....

ALL CASH RECEIVED			ALL CASH APPLIED			FIVE WAYS APPLIED					THREE WAYS REC'D.		
Day of Month	Explanation	1 Amount	Day of Month	Explanation	2 Amount	3 Necessities H	4 Savings H	5 Gifts to Others H	6 Luxuries H	7 Cost of Earnings H	8 Earnings H	9 Allowance	10
						Economy	Saving	Giving	Self-Control	Enterprise	Industry		

School Savings[4]

"When deciding the question of School Savings, the following points should be considered:

"Are you doing this for the benefit of the pupils, or to help a local Bank to get some deposits?

"If you are conducting a Savings System for the benefit of the pupils, do not ask the Bank to do the work. The children are more interested and will save more money when they do the work, than when an outsider comes in and collects the deposits.

"How much time can you give to such important work? Fifteen, twenty, or thirty minutes?

"Do you want the pupils to practice a real form of bank bookkeeping while saving,—a manual training in banking, so to speak?

"Avoid any system that permits the pupil to deposit a quarter one week and withdraw some part of it the next. The pupil is merely playing at bank, with such a system, and not acquiring habits of Thrift.

"Avoid haphazard savings plans, that are likely to be so loose that errors may occur, with no way to trace their source. The only failures in school banking have been where some 'easy' system was tried. Any good banking system requires a little time and attention on the part of teachers and pupils."

[4] From "The Making of Independent Citizens," published by the Upliftthrift System of Philadelphia.

Blanks Used by Todd System of Developing Thrift

Thrift Report of _____ School, Month of _____ 19__

Grade	Depositors			Percentage of Depositors to Enrollment			Savings in Banks			Comparison of Total Savings With Last Report	
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Per Cent Increase	Per Cent Decrease
Total											

To be Filled In by the Pupil

Month	*Weekly Savings				Total Savings
	1-7	8-15	16-23	24-Last	
Total					

*The days of the month shown at the head of each of the four "week" columns are inclusive.

To be Filled In Only by Bank

Date		Deposited		Received by (or) Paid Out By	Withdrawn	
				Totals Carried Forward		

By presenting this Pass Book to this Bank one year after first date entry above, a new one will be furnished, free of charge.

For Use in the Schools

Month	Weekly Savings				Total Savings
	1-7	8-15	16-23	24-Last	
Total					

The figures shown herein have been copied from the pupil's Bank Pass Book turned in to the school for that purpose at the close of each month. This clerical work—a valuable business-training in itself—is done, mostly,

For Use in the Schools

Month	Balance Brought Forward		Deposited		Withdrawn		Balance at Close of Month	
Total								

by the pupils themselves; however, under such close supervision of the teacher as, in all cases, insures correctness. Only "money-in-the-bank" figures enter into teacher's monthly report.

Thrift in the Pasadena, California, Schools

Report of the Meeting of "Thrift" Committee

1. We recommend that every teacher in the Elementary Schools be requested to teach *Thrift* for a period of 30 minutes a week, minimum time; and that a record be kept containing (1) the teacher's aim; (2) sources of reference, original ideas, etc.; (3) reaction of the pupils, all with a view of the compilation of a course of study in Thrift for the Elementary Schools of Pasadena. The formal report is to be handed to the Superintendent.

2. We recommend the adoption of a record sheet for use of the pupils in keeping the record of their earnings for Thrift stamps.

3. We recommend that a contest be conducted in each grade of each school, at the option of the principal, beginning —— and ending ——. A prize of four thrift stamps will be given to the pupil of each grade in each school participating, who shows the best kept record from the standpoint of originality, neatness, self-denial, etc. The teacher or teachers of each grade are to choose the winning record.

4. We recommend that each principal send to the Superintendent each week a report of the number of Thrift stamps sold during the week.

(Signed) *Committee.*

GRADE

Pasadena City Schools Thrift Record

This is a record of my efforts to earn and save in order to purchase United States Thrift Stamps

Name _____ _____ *School*

Date		Amount Earned	Stamps Bought	Date

Victory Boys and Victory Girls in Earn and Give Campaign [5]

Suggested Employments for Boys and Girls in the Drive for Earning and Giving

What Boys Can Do

Digging gardens. Planting bulbs.
Sawing and cutting wood.
Raising guinea pigs, white mice and squabs.
Beating carpets and rugs.
Varnishing chairs. Waxing floors.
Mowing and raking lawns and cleaning yards.
Painting and putting away screens.
Painting houses, barns and fences.
Sifting and dumping ashes.
Cleaning silver.
Washing windows. Scrubbing floors.
Cleaning cellars, barns and attics.
Decorating show windows.
Making stocking stretchers for ladies who are knitting for soldiers.
Making needed household articles, such as coat racks, chairs, andirons, umbrella racks, etc., that sell at reasonable prices.
Tutoring backward students.
Waiting on table as "extras" in boarding houses.
Shoveling snow from walks.
Washing automobiles and carriages.
Running errands.
Caring for furnaces, cleaning sidewalks, assisting janitors.
Selling appropriate religious books and publications for Christmas gifts.
Selling magazines.
Taking subscriptions which allow liberal commissions.
Selling pecans, walnuts, etc., especially during the Christmas season.

[5] By Chas. E. Rugh, in *Sierra Educational News*, November, 1918.

Monthly Household Budget

Issued by

The American Society for Thrift

220 West Forty-second St., New York City.

(Copyright, 1918, American Society for Thrift)

KEEP THIS BUDGET FOR FUTURE REFERENCE

MONTH _____

YEAR _____

EXPENSES

Date	Income		Total disbursements		Cash on hand		Food		Clothing		Rent, light, fuel, telephone	
							Anticipated	Actual	Anticipated	Actual	Anticipated	Actual
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
Total												

HOW TO USE THE BUDGET

At the beginning of each month fill out the columns marked "Anticipated," basing the estimates of expenditure on your known income. The "Income" column also should be filled out in advance. At the end of each day fill out the space in the "Total Disbursements" column. The "Cash on Hand" column should be posted daily and should represent, of course, the difference between income and total disbursements.

This budget is unique in that it contains, in parallel columns under each item, space both for "Anticipated" and "Actual" expenditures. There is a great advantage in being able to plan in advance in such detail your household or personal outlays for the month. In this way only is it possible for one to provide definitely for all needs with a fair and sensible margin for savings.

Having filled out your "Anticipated" budget for the month, make an effort from day to day to do even a little better than you have planned, thus adding zest to your thrift endeavors and making it possible to increase your savings to a greater degree than you had expected.

The Monthly Budgets should be kept and filed, and at the end of the year a recapitulation of your income, expenditures and savings should be recorded.

Insurance and education		Recreation		Religion, charity		Physician, dentist		Sundries		Savings	
Antici-pated	Actual	Antici-pated	Actual	Antici-pated	Actual	Antici-pated	Actual	Antici-pated	Actual	Antici-pated	Actual

The Red Triangle Magazine offers liberal commission for subscriptions.
Helping to harvest ice.
Picking cotton.
Picking fruit.
Gathering nuts.
Selling butter, eggs, vegetables and fruit.
Making maple syrup.
Raising chickens, pigs, etc.
Trapping fur-bearing animals in season.
Husking corn.
Working about a dairy.

How Girls Can Earn Money

The following list is suggestive only and there are doubtless many other ways in which the Victory Girls will be able to secure the money for their pledges. All girls must be careful to obey the existing child labor laws:
Caring for children.
Washing dishes. Cleaning silver.
Knitting.
Making simple garments for sale.
Saturday work in offices, stores, etc.
Sale of Christmas cards, wreaths, etc.
Sale by groups of girls of Conservation foods.
Canning and preserving.
Picking fruit.
Gathering nuts.
Planting bulbs.
Self-denial fund from allowances.
Sale of butter, eggs, vegetables, poultry, jellies.
Subscription for magazines.
Mending.
Running errands.
Typewriting.
Blacking shoes.
Summer gardening.
Tutoring.
Shoveling snow.

War-time Examinations

A list of most suggestive problems was recently prepared by David Eugene Smith of Teachers' College, Columbia University. These have a direct bearing on War-Savings and their application may be seen in the development of problems in the schoolroom at any time. The entire list has a distinct thrift setting.

The following questions are selected from those prepared for the 5th, 6th, 7th and 8th grades. They may be used as review and drill work. Teachers will find them very valuable.

THRIFT IN GRADE V

Helping Our Country

1. On a Thrift Card each space for a Thrift Stamp is 15-16 of an inch high, and there are four spaces, one above another, in each column. How high is each column?

2. On a Thrift Card each space for a Thrift Stamp is $1\frac{3}{8}$ inches wide and there are two spaces, side by side, in each half of the card. How wide are the two spaces together?

3. A Thrift Card is 7 inches wide and $7\frac{5}{8}$ inches high. How many square inches are there on each side of a Thrift Card?

4. If you could buy one Thrift Stamp on Monday, two on Tuesday, four on Wednesday, eight on Thursday, and 16 on Friday, how many Thrift Stamps could you buy that week?

5. In Example 4, suppose that a man could buy thirty-two Thrift Stamps on Monday, and keep doubling as before, so that the numbers for that school week would be 32, 64, 128, 256, 512, how many Thrift Stamps could he buy that week?

6. Our Government finds that it can buy 1,000 shelter tents for $2,967.80. When War Savings Stamps are selling

for $4.18 each, how many must be sold in order to raise enough money to buy them?

7. When War Savings Stamps are selling for $4.18 each, how many must be sold in order to raise money enough to buy $1,492.26 worth of coats?

Our Government can buy 100 coats for $1,492.26.

8. In the first seven months of the war, our Congress voted to spend $62,133,000 for aviation. It had to borrow the money for this purpose. Suppose each of our 100,000,000 people bought only three Thrift Stamps at 25 cents each, would that furnish enough money? Find how much more or how much less would suffice.

9. The total expenses of the United States Government from the time it was established down to 1917 was $26,300,000,000. In 1917 the Government was compelled to raise, chiefly for the war, $19,000,000,000. The amount raised in 1917 lacked how much of being as much as all the expenses of the Government down to 1917?

10. The total income of all the railroads of the United States in 1916 was $3,662,057,141. If we spent five times this amount in 1917 in preparing for war, how much did we spend for this purpose in 1917?

THRIFT IN GRADE VI

Helping Our Country

1. If the population of the United States on January 1, 1918, was 102,826,300, and if one-fourth of the number buy War Savings Stamps or Thrift Stamps, how many persons buy these stamps?

2. If you have bought sixteen Thrift Stamps at 25 cents each, and wish to use these in buying a War Savings Stamp in a month, when the price is $4.22, how much more money must you have in order to buy the Stamp?

3. We are not a thrifty people. The average savings bank deposits for every person living in New Zealand is $129. If every man, woman and child in our country should buy thirty War Savings Stamps, when the price is $4.18 each, how much would the value of the stamps lack of being $129?

4. Most people can save $4.18 if they try to do so. Suppose that our population in July, 1918, was 102,900,000, and that 1/3 of this number bought one War Savings Stamp at $4.18, how much money would our Government receive from the sale?

Every little helps. Four dollars is not very much, but over $140,000,000 is a large sum.

5. By taking care of their clothes and shoes, and by avoiding waste, each pupil in a certain class helped its family save $4.20, which was enough to buy a War Savings Stamp. There were eighteen pupils in the class, no two from the same family. As a result of this, how much money could the eighteen families invest in War Savings Stamps?

THRIFT IN GRADE VII

Helping Our Country

1. We are not a very thrifty people. Our savings bank deposits average $51 per person of our total population. In Switzerland the average is $86. At 25 cents each, how many Thrift Stamps ought each of us to buy, on the average, to bring our savings in these banks and in Thrift Stamps up to the Swiss average?

2. It was estimated that 29 per cent. of our 102,826,300 population of January, 1918, would buy War Savings Stamps, and that each of the purchasers would thus lend Our Government, on an average, $66 2/3. At this rate, how much would Our Government receive from the sale of these Stamps?

Vast sums grow from small ones, if you have enough of them. If you can buy only one Thrift Stamp, that will help.

3. If a boy buys one Thrift Stamp every week day of the year 1918, thus saving 25 cents for each Stamp, how much would he save in this way in the year?

4. A man works on a salary of $25 a week for 50 weeks in a year. He uses 80 per cent. of his income for living expenses and 50 per cent. of the balance for Thrift Stamps. How many Thrift Stamps does he buy?

5. If you bought a War Savings Stamp on January 1, 1918, it would have cost $4.12 and our Government will pay you $5

for it on January 1, 1923. How much more do you receive than you would receive by investing $4.12 for 5 years at 4 per cent. simple interest?

6. A man bought 200 War Savings Stamps on July 1, 1918, when they cost $4.18 each. On January 1, 1923, Our Government will pay him $1,000 for these 200 stamps. How much more does the man receive than he would have received if he had invested the money for the same length of time at 3 per cent. interest?

7. A man wishing to buy 100 War Savings Stamps in October, 1918, when the price was $4.21 each, found it necessary to borrow the money at a bank for 60 days. The bank charged him at the rate of 4 per cent. How much interest did he pay the bank?

If he gave a note for 60 days, the interest was probably paid in advance and was called *discount.*

THRIFT IN GRADE VIII

Helping Our Country

1. A boy paid $4.12 for a War Savings Stamp on January 1, 1918. The Government allows him 4 per cent. interest on this amount compounded quarterly. The Government will pay $5 for the Stamp on January 1, 1923. Show that the boy receives 4 per cent. interest, compounded quarterly, as stated.

2. In the schools and colleges of the United States there were 23,856,890 pupils in 1916. Suppose that such a number should each buy a War Savings Stamp and pay $4.12 for it; how much would thus be loaned to Our Government?

3. A man bought $200 War Savings Stamps on January 1, 1918, at $4.12 each. Our Government returns the money to him on January 1, 1923, with 4 per cent. interest compounded quarterly. How much more interest will he receive in this way than he would if he had invested the money at 4 per cent. simple interest for the same period?

4. A girl bought some War Savings Stamps and received Certificate No. 10,120,742 on which to affix them. She was interested to see how much paper Our Government used to print the 10,120,742 certificates. She found that her certificate

measured 8 inches by 11½ inches. Find the number of square inches that all these certificates would cover, and then express the result as square feet.

5. In Example 4 suppose that each of these certificates was filled with War Savings Stamps, costing on an average $4.18 each; how much would our Government receive from the sale of the stamps?

Remember that it takes 20 War Savings Stamps to fill the Certificate.

6. Suppose that 70 per cent. of the 25,857,000 pupils of all the schools and colleges in the United States should buy one Thrift Stamp today, and 80 per cent. should do the same next week, and 90 per cent. the week following, how much money would they all save in this way?

Think what it would mean to Our Government to have the use of such a sum of money.

Coöperative Extension Work in Agriculture and Home Economics [6]

"One of the principles of thrift is knowing the worth of good friends. Having found good customers, the thrifty woman sells regularly at a profit, for she keeps up her standards of weight and purity and never fails to be on time. Sometimes a good retail merchant, a boarding house or hotel will prove a good customer. . . .

"Order is one of the principles of thrift. Disorder makes confusion and confusion makes waste. In the home where order reigns things start off right in the morning, because first of all everybody rises at a regular hour. Children start to school without hurry, bustle or confusion, because their books are

[6] From bulletins issued by Mrs. Nat. P. Jackson, Agricultural-Mechanical College, Texas.

put in order the night before and lunches planned and partly prepared the previous day, are ready. . . .

"So you see many a town woman must practise all sorts of small savings if she would be thrifty. Country women are used to having great pails of rich milk, dozens and dozens of eggs, stacks of golden yellow butter."

Suggestive Farm Women's Reading Courses[7]

Thrift

Date.....
Answer to Roll Call.....Each member give her idea of thrift.
Music.
Book Review—"The Brown Mouse" .....Mrs. ———
Talk—"How I Save in Little Things".....Mrs. ———
Music .....Selected.
Paper—"Some Spending that is Saving".....Mrs. ———
Reading—
"Mirthful Knights in Modern Days".....H. L. Marriner.

Questions

1. Each member tell of some thrifty family she has known and tell how each family has made money and bought property.
2. How do you practice thrift?
3. Can people be taught how to be thrifty?
4. How can this be done?
5. Show that it is a sin to be wasteful.
6. Why are we Southern people said to be wasteful?
7. How can your neighborhood set an example of thrift?
8. Discuss plans for working as a community for thrift and prosperity.

Note.—Reading of paper by President.

[7] Prepared by Mrs. N. P. Jackson.

Order on the Farm

Date.....
Answer to Roll Call.....Quotation or Thoughts on Order.
Reading—"Cactus Blooms".....H. R. Greer.
Music .....Selected.
Talk—"Everything in Its Place".....Mrs. ———
Reading .....Selected.
Music .....Selected.
Paper—"The Value of Order in the Home".....Mrs. ———

Questions

1. Show that it is thrifty to be orderly.
2. Show how order in the home helps the woman to get through with her work.
3. Show that order in the home helps the man in his business.
4. What is the effect on the children?
5. What do you understand a well-ordered home to mean?
6. How can children be trained to keep order at home?
7. Do the children from orderly homes create trouble at school?

Small Savings

Date.....
Answer to Roll Call.....Little Stories About Saving.
Music .....Selected.
Talk—"The Extravagance of Our Day".....Mrs. ———
Reading—"The Spiders".....Mrs. ———
Discussion—"What Small Savings Pay".....Mrs. ———
Reading .....Selected.
Music .....Selected.

Questions

1. What is meant by being "Penny wise and pound foolish"?
2. How do economies differ from those our grandmothers practiced?
3. Compare the mode of living to-day with that of fifty years ago.
4. Why is it harder to save now than it was then?

5. Is it a saving now to piece quilts? To make lye soap? To mold candles?
6. Why is it easier to save in the country than in town?
7. Each member tell of little savings that have paid her.

Marketing Small Farm Products

Date.....
Answer to Roll Call—
Each member tell what she produces for sale.
Music—Selected .....Mrs. ———
Talk—"Getting Things Ready for Market".....Mrs. ———
Reading—"Sabine Boat Song," Ernest Powell....Mrs. ———
Paper—"How to Sell Small Farm Products"....Mrs. ———
Music—Selected .....Mrs. ———
Book Review....."Mary Cary."

Questions

1. What small products are sold from the farm in your neighborhood?
2. Is it better to sell and buy for cash or to trade farm products for goods?
3. Each member give her experience about this.
4. Is it satisfactory to sell to peddlers?
5. How does the condition of roads in your neighborhood affect the sale of vegetables, eggs, butter and fresh things?
6. Has your community a reputation for marketing fresh things?
7. Have they any plans for coöperative marketing?
8. What do you know about cream circuits and egg circles?

The Red Cross' Salvage and Shop Work

The Red Cross has taken up a commendable thrift and conservation program which is called "Salvage and Shop." This work originated with the Pacific Division of the American Red Cross and was given its first trial in San Francisco. The success there was so marked that the movement rapidly

spread to other cities and is fast becoming nation wide in its scope.

In explanation of the educational features of this work the Red Cross has made the following analysis:

The biggest problem of America to-day is the education of our young Americans to an understanding of what constitutes good citizenship. The war has developed our great national need of *thrift.* The Red Cross, through *salvage and shop,* with its work of conservation, has taught thousands of American people these vital lessons of *thrift.* If the nation as a whole is to learn these lessons, they must be taught through the younger Americans—the children in the schools—the members of the Junior Red Cross.

Salvage and shop stands for Sacrifice, Saving and Service. Education in ways of *Conservation,* and the methods of developing habits of *Thrift* among the American people, are lessons to be learned by all who save. *Salvage* and *saving—conservation* and *construction:* these are lessons to be learned by all of us, and these are lessons to be learned from *salvage and shop.*

In addition to Education along the lines of Conservation and Thrift, *salvage and shop* teaches a great spirit of Service through sacrifice and personal effort. The program of *salvage and shop* is all-inclusive; every home and every school and every social unit in America is to be taught to save and serve. These are lessons based upon the very principles of the Red Cross.

Through active participation in the business of converting waste materials into commodities which may be sold for the benefit of the Red Cross, the younger Americans who take part in this work are unconsciously receiving a practical education in methods of business and commercial transactions. Visual education and actual experience are the finest of teachers. *Salvage and shop,* through its large and efficient organization, becomes a very potent factor in the education of the younger Americans in practical business.

The Government has called upon the Red Cross to help in this great campaign, and to educate America in ways of Thrift and Conservation. It is a tremendous program and *salvage and shop* must play a big part.

The conservation elements in the salvage and shop work are explained by the Red Cross in the following announcement:

"The greatest lesson which America must learn from the recent war is the lesson of *conservation.* Spell *conservation* differently and it reads, '*salvage and shop.*' Material which is not in active service is slacker material. This was the decision of the Federal Government in war time and it is no less true at the present time of reconstruction and rehabilitation. Keeping material or permitting it to remain out of active service is hoarding. These are harsh terms, but we have a great lesson to learn and the government has called.

"*Salvage and shop* is based upon those fundamental principles of Saving and Service which form the basis of *conservation.* Every bit of waste material which is saved by the Red Cross means just so much material which need not be manufactured again. Iron which is Salvaged and Saved, means just that much iron which need not be dug from the ground and manufactured from the crude ore. This means saving in the material itself; in the iron and the coal and the other articles necessary in the manufacture; the saving of the labor of converting the ore into the finished product; and finally, the saving of that most valuable item, the time expended in the process.

"This is what is meant by true *conservation.* The possibilities are so boundless that we stand amazed at the power for service which is within our grasp. The government took up the matter of the *conservation* of forests and minerals and water-power in the past, and has now begun a great educational program to promote *conservation in every line* in the future.

"During the war *salvage and shop* was called upon to do actual war service in the saving of fruit—pits, nutshells, tin, platinum, and other materials which were needed for war purposes by the government. Now that we are at peace, our duty is none the less great. The education of the American people in ways of *thrift* and *conservation* is as big a job as anyone could ask. The work has just begun;

in the *salvage* and *conservation* of materials, the Red Cross has merely scratched the surface of the great possibilities which lie ahead. It is a patriotic effort thoroughly worth while. *We must go on. Salvage* and *saving—conservation* and *construction* —these are the bases for *salvage and shop.* Real service is demanded. *This is our opportunity.*"

Suggestions on Thrift Teaching [8]

"There is one phase of the Thrift problem that it seems to me we all neglect. It might well be called social thrift and would involve the study and solution of such problems as the neglect of feeble-minded people and the expense involved through their unlimited propagation, the wasteful and harmful methods of punishment of criminals, the lack of organized and constructed charity, and the big problem of the unemployment of unskilled labor."—From Clarence H. Dempsey, Supt. of Schools, Haverhill, Mass., member committee on Thrift Education, National Council of Education.

"We have attempted to do something in this line (Thrift) in our schools, both graded and rural. This (the home) is where the solution of the problem must take place, and using the boys and girls as the medium for the transmission of the knowledge, they will learn the lessons themselves. There are other avenues to be used, but this is the big channel for our

[8] Taken from Reports made to the Chairman of the Committee on Thrift Education.

use. I will attempt to have our teachers in this county teach the subject in connection with the other work in the most practical way. You will be interested to know that our great State Teachers' Association had a strong resolution adopted on this very subject."—HARVEY H. LOWREY, County Commissioner of Schools, Ionia, Michigan.

"The Superintendent of Public Schools has appointed a committee to outline methods by which the principles of thrift may be taught in schools."—MISS A. V. SMITH, Member of Committee, Washington, D. C.

In the Pomona, California, schools, G. Vernon Bennett, Superintendent, a course in preparedness for men and boys includes under the subject of thrift, the following:

Personal budgetary accounting.
Savings accounts and investments.
Home gardening.
Care of clothes and shoes.
Economics, bookkeeping and business.

For women and girls the thrift course includes:
Home accounts.
Dressmaking, cooking, millinery.
Savings, stimulation and practice.
Inexpensive pleasures.

"This problem ought to be worked out perfectly enough to touch the lives of 10,000 teachers who are coming out every year. I suppose you really could

not touch the schools anywhere so vitally as through the normal schools that are turning out a large percentage of the teachers of the country. . . . We had an organization among the students and faculty a few years ago called 'The Safety League.' This league started out to see what might be done about the college and town to improve conditions of living. I was interested in the things suggested—little things that the average person would overlook. It is not the essays that are written especially, but the thought that they can suggest ways in which thrift can be worked out in the school buildings, about the home and in the community."—CHAS. MCKENNEY, President Michigan State Normal College, Ypsilanti.

RECOMMENDATIONS ADOPTED BY THE CALIFORNIA COUNCIL OF EDUCATION, DECEMBER, 1917

1. Let teachers of all grades from kindergarten to junior college, be asked to mingle instruction in thrift with the teaching of all regular subjects. Wide use of *The Thrift Magazine* is recommended.
2. Let there be undertaken at once by competent authority the preparation of a special bulletin or manual on thrift, outlining in detail specific instruction suited to the respective grades and kinds of school.
3. Let provision be made for teacher training by principals and superintendents in coöperation with especially qualified university men and other experts.

4. Let the organization of junior Red Cross Societies among pupils be encouraged and assisted by the teachers.
5. Let the school coöperate more thoroughly with the home in practical thrift through parent-teachers' organizations and the like.
6. Let the schools organize and operate school savings banks with the coöperation of the best banking knowledge in the respective communities.
7. Let prize essay contests on thrift be instituted on a general scale, participated in by entire schools or school systems.
8. Let there be interesting, diversified programs of a public character, as the culmination of prize essay contests.
9. Let publicity campaigns on thrift be promoted from time to time, participated in by the schools, the press, the savings bank, civic organizations and the entire communities.

ROCKWELL D. HUNT, Head of the Dept. of Economics, University of Southern California, Chairman Committee on Thrift, California Council of Education.

"I have had a feeling that in connection with the business department it might be possible to establish a type of accounting in connection with the home that would take in all the various lines of home expenditure and get the boys and girls to consider the home

on a business basis, and to take care of it, just as it is done in a department store. They would take care of the money coming in and the money going out. I have been trying to find a way to establish a sort of home bookkeeping."—MILO H. STUART, Principal Arsenal Technical Schools, Indianapolis, Ind., Member Thrift Committee, National Council of Education.

"There could be a great deal done in the schools along the lines suggested. I mean in the saving of supplies. I call to mind one of our boys who graduated a year or so ago. He became guardian of the home expenditures, had complete charge of the cellar and fruit rooms and kept everything at the right temperature and saw that things were used at the right time."—KATHARINE D. BLAKE, Principal Public School No. 6, New York City, Member Committee on Thrift, National Council of Education.

"I should think that in the farming counties in connection with what is being done along agricultural lines, the granges as well as the county superintendents might take up a movement of this kind (county thrift essay contest) with a great deal of interest."—JOHN D. SHOOP, former Supt. of Schools, Chicago, Ills., member Thrift Committee, National Council of Education.

"The experience that we had was in the line of getting an expression from the teachers on the question of personal thrift—not of teaching, but of personal thrift. A proposition was made that a certain

part of their salaries should be diverted and placed in a fund that should accumulate at compound interest, and the matter was put before the teachers for their acceptance by indication of their preference. About 58 per cent. were adverse to the proposition, which indicates that our teachers need instruction on the matter of thrift, before they are properly able to teach it. It occurs to me that the most satisfactory method is to get the teachers first and to win them over to the right attitude. Many teachers, in discussion said, 'How doubly fortunate it would have been if this proposition had been presented years ago. I would have had thousands of dollars in the bank.'" —IRA I. CAMMACK, Supt. of Schools, Kansas City, Missouri.

THRIFT CONTEST—$50 PRIZE

OREGON AGRICULTURAL COLLEGE
EXTENSION SERVICE
O. D. CENTER, *Director*

BOYS' AND GIRLS' INDUSTRIAL CLUBS
Oregon Agricultural College, United States Department of Agriculture, Oregon State Teachers' Association and Oregon State Bankers' Association, coöperating

THRIFT CONTEST SCORE CARD

Report of the County Superintendents of Oregon to the Thrift Committee of the State Teachers' Association for the year ending ....., 19..

Address, Co. Supt. .....
Number Districts .....
County .....
Total School Enrollment .....

1. How many pupils in the schools of your county have saved and deposited in a bank or postoffice (including Thrift Stamps and Liberty Loan Bonds) an average of at least ten cents a week during the year? Answer.....

2. How many pupils have devoted an average of three hours or more a week to home industry, including food production or preparation, such as gardening, poultry raising, pig raising, fruit packing, cooking, canning, sewing, carpentry, or any club project? Answer.....

3. How many pupils have prepared during the year written work on Thrift and submitted same to their teachers, County Superintendent or to some newspaper for publication?
Answer.....

4. How many persons have participated in Thrift programs, including readings, recitations, debates or addresses, conducted by the schools of your county during the year?
Answer.....

5. How many pupils have kept personal expense accounts or club project accounts, or assisted their parents in keeping household or farm accounts during the year? Answer.....

6. Total Activities? Answer.....

7. Ratio of Activities to number of pupils enrolled?
Answer.....

I certify that the above report is based on reports received from schools which were carefully checked by the respective principals, and I believe the same is correct.

Committee of the State Teachers' Association for the Stamps and Liberty Loan Bonds) an average of at least ten

.....
County Superintendent.

Dated .....19..

THRIFT

Without me no man has ever achieved success, nor has any nation ever become great.

I have been the bedrock of every successful career, and the cornerstone of every fortune.

All the world knows me and most of the world heeds my warning.

The poor may have me as well as the rich.

My power is limitless, my application boundless.

He who possesses me has contentment in the present and surety for the future.

I am of greater value than pearls, rubies and diamonds.

Once you have me, no man can take me away.

I lift my possessor to higher planes of living, increase his earning power, and bring to realization the hopes of his life.

I make a man well dressed, well housed and well fed.

I insure absolutely against the rainy day.

I drive want and doubt and care away.

I guarantee those who possess me prosperity and success.

I have exalted those of low degree, and those of high degree have found me a helpful friend.

To obtain me you need put out no capital but personal effort, and on all you invest in me I guarantee dividends that last through life and after.

I am as free as air.

I am yours if you will take me.

I AM THRIFT.

—AMERICAN BANKERS' ASSOCIATION.

THRIFT IN THE SCHOOLS

Outline of a Course of Study for Elementary Schools

ISSUED BY THE UNITED STATES GOVERNMENT, TREASURY DEPARTMENT, WASHINGTON, D. C., APRIL, 1919.

Definitions

Thrift is care and prudence in the management of one's affairs.

"Thrift means the sane administration of one's personal affairs to the end that there shall be the least amount of waste, the least amount of lost motion, and the greatest good to one's self and the nation."—*Straus.*

"Economy is near to the keystone of character and success. A boy that is taught to save his money will rarely be a bad man or a failure; the man who saves will rise in his trade or profession steadily; this is inevitable."—*Gladstone.*

Thrift means to get the most for one's money, the most for one's time, the most for one's strength.

"Extravagance rots character; train youth away from it. On the other hand, the habit of saving money, while it stiffens the will, also brightens the energies. If you would be sure that you are beginning right, begin to save."—*Roosevelt.*

Aims

1. To give the child a broad understanding of the specific facts and underlying principles of thrift.

2. To train the child in habits of conservation and the wise use of all his resources.

3. To create through the schools a public senti-

ment in favor of thrift and economy, and through this public sentiment, to cultivate the national habit of thrift.

Methods

1. Direct presentation of the ideals, purposes and principles of thrift through morning talks, discussions, special exercises, and school savings societies.

2. Correlation of subject matter on thrift with the established curriculum of the schools.

3. Habit formation through the practice of saving time, materials, and money; investment in Thrift Stamps and War Savings Stamps; deposit of money in local savings institutions.

Ten Principles of Thrift

To be emphasized in the various subjects of the curriculum:

1. "Conservation, in geography."
2. "Opportunity, in biography."
3. "Coöperation, in history and civics."
4. "Industry and ideals of thrift, in literature."
5. "Earnings, savings and investment, in arithmetic."
6. "Hygiene and sanitation, in physiology."
7. "Economy in construction and use of materials, in shop work."
8. "Economy and right use of foods, in cooking."
9. "Economy of making and repairing, in sewing."

10. "Enthusiasm, concentration and singleness of purpose, in all subjects."

Five Principles of Personal Thrift

1. Learning how to keep healthy.
2. Learning how to work efficiently.
3. Learning how to save time, energy, money and materials.
4. Learning how to spend wisely.
5. Learning how to invest money intelligently.

Outline by Grades

Grades I. and II.

I. Direct Instruction.—Morning talks on the importance of small savings in school and at home—paper, pencils, light, food and money; care of books, shoes and clothing.

II. Correlated Study.—1. Numbers: Counting and adding money saved. Teach objectively with cents, nickels and dimes, combinations of numbers to 25. A means of explaining the cost of a Thrift Stamp.

Example.—How many cents does it take to buy a Thrift Stamp? 15c + 10c = 25c.

2. Reading: Mother Goose rhymes, nature poems and familiar stories which teach lessons in thrift.

3. Oral Language Studies: (*a*) Nature study: indoor gardening, observation of seeds in process of germination, transplanting of seedlings; pro-

tection of neighborhood plants and flowers; conservation of wild flowers and shrubbery.

(*b*) Hygiene: emphasis on sleep, fresh air, cleanliness, plain food, care of teeth, and the prevention of colds and sickness.

(*c*) History and geography: economy of primitive life as illustrated by pastoral peoples; large territory necessary to support tribes who move from place to place. American Indian: hunting and fishing as chief occupations; agriculture in primitive stage; little provision for future; indolence among the men.

III. Practice.—Saving pennies, nickels and dimes. Use of plan to record pupils' savings of less than 25 cents. Purchase of Thrift Stamps; saving paper and pencils.

GRADE III.

I. Direct Instruction.—Salvaging of clothes and paper for charitable purposes. Saving of time by orderly methods at home and in school. Morning inspection for cleanliness; care of hair, teeth, hands and nails.

II. Correlated Study.—1. NUMBERS: Simple addition, subtraction and multiplication in problems relating to Thrift and War Savings Stamps.

EXAMPLES.

How many stamps are needed to fill one-half a Thrift Card?

When a Thrift Card is full, how much is it worth?

When a Thrift Card is full, how much must be added to buy a War Savings Stamp in May?

2. HYGIENE: Study of health rules. Attention to eyes, ears, nose and teeth, with definite reasons for

their proper care. Correct posture for standing and sitting.

3. HISTORY AND GEOGRAPHY: Robinson Crusoe; salvaging useful things from the shipwreck; industry in providing necessities; simplicity of his life. American Colonial thrift; industry in clearing forests and building houses; spinning, knitting, weaving and other practical arts learned in the home. Thrift of the early settlers in various sections of the country; conquest of forests and prairies.

4. NATURE STUDY: Industry and providence of squirrels, chipmunks, and ants. Economy of seeds, fruits and plants in storage of food for future use. Man's food made by action of sun's rays on the leaves of plants. Roots extract nourishment for the plant from the soil.

5. ENGLISH: Oral and written compositions on saving materials and money. Topics: "How pennies grow to quarters"; "How I save at home." Thrift stories and poems: Aesop's Fables and Robinson Crusoe.

III. Practice.—Saving small sums of money. Use of plan to record pupil's savings of less than 25 cents. Purchase of Thrift Stamps. Savings of books and protection of school furniture.

GRADE IV.

I. Direct Instruction.—MORNING TALKS: A principle of thrift—learning how to keep healthy. Good and poor ways of spending money. Earning,

saving, and sharing in home projects. Difference between thrift and stinginess.

II. Correlated Study.—1. ARITHMETIC: Fundamental processes in problems relating to earning, spending and investing. Special problems involving the purchase of Thrift Stamps and War Savings Stamps.

EXAMPLES.

There are 26 girls in the fourth grade. Each girl bought 16 Thrift Stamps. How many did all the girls save?

By selling papers, Jack earned enough money to buy two War Savings Stamps and 12 Thrift Stamps. How much money did he loan to the Government if he paid $4.14 for each War Savings Stamp?

2. HISTORY: Illustrations of economy in the home life of the Greeks and Romans. "Everything in moderation" as a Greek ideal. Physical efficiency of the early Greeks and Romans. Frugality of the early Romans. Luxury and extravagance as a cause of the decline of Rome. France: remarkable recovery of the French nation through thrift after the Franco-Prussian War. United States and the Allies: conservation of labor and material as a means of winning the great war.

3. GEOGRAPHY: Study of local industries, occupations and agricultural products; home markets, gardening, boys' and girls' club work, and excursions to local manufacturing plants. Relation of the foregoing to the means of making a living and providing for future needs.

4. HYGIENE: Home and school hygiene; correct methods of ventilating and regulating the temperature of sleeping rooms and school rooms; daily physical exercise; value of manual work. Obedience to and daily practice of common health rules. Health as potential wealth. Health saves expense of sickness. Health inspection in the schools.

5. NATURE STUDY: Birds and bees as agents of Nature's thrift. Destruction of harmful insects by birds. Industry and providence of bees in storing honey for winter. Ways in which plants and animals protect themselves and their young.

6. ENGLISH: Reading of "Stories of Thrift for Young Americans," Scribner, New York. "How We are Clothed," Macmillan, New York. "How We are Fed," Macmillan, New York. "Safety First for Little Folks," Scribner, New York. Red Cross stories of child thrift in other lands. Dramatization of short thrift plays and the writing of compositions on thrift subjects. Ways of practicing thrift—odd ways—usual ways.

7. SPECIAL: Savings Society programs at specified intervals.

III. Practice.—1. Care of clothing; repair of clothing. Care of shoes. Neatness in dress. Care of books; repair of books. Keeping desks clean and in order.

2. Direct the collecting instinct, which awakens at the age of ten, along usual channels of saving.

3. Salvage of paper, rubber, copper, tinfoil, iron and bottles.

4. Encourage definite earnings; doing errands and household tasks; selling produce.

5. Buy Thrift Stamps and War Savings Stamps.

GRADE V.

I. Direct Instruction.—DISCUSSION TOPICS: A principle of thrift—learning how to work efficiently. Meaning of economy. Wise use of time and recreation; work and sleep in right proportions. Formation of correct habits; good habits of study. What children have done that shows the value of thrift.

II. Correlated Study.—1. ARITHMETIC: Keeping personal accounts of earnings and savings.

EXAMPLE.

Account of Week Ending May 10, 1919

1919	Receipts		1919	Expenses	
May			May		
4	On hand	$0.22	5	Car fare	$0.10
5	Allowance	.25	6	Pencils	.08
8	Waste paper	.40	8	Candy	.10
10	Delivering packages	.50	9	Red Cross	.25
			10	Thrift Stamps	.50
			10	Balance on hand	.34
		$1.37			$1.37

2. HISTORY: Illustrations of thrift and public service in promoting the economic welfare of the country, selected from the biographies of Franklin —widespread public instruction in thrift. Jefferson —foresight in purchase of Louisiana. Lincoln—

wise use of time and opportunity. Roosevelt—conservation of natural resources. Hoover—food saving.

3. GEOGRAPHY: Study of industries in different sections of the country. Increased production of food and manufactured articles through improved machinery. Quantity production reduces cost. Utilization of by-products reduces waste. By-products of cotton, corn, wheat, petroleum, coal and the packing industry.

4. HYGIENE: Health habits necessary to personal efficiency. Impairment of health and waste of money through useless luxuries. Methods of preventing communicable diseases: vaccination, quarantine. Keeping the community in sanitary condition.

5. ENGLISH: Reading of "Poor Boys Who Became Famous," Crowell Company, New York; "The True Story of Benjamin Franklin," Lothrop, Lee and Shepard Company, Boston; "The Child's Food Garden," World Book Company, Yonkers, N. Y. Compositions on the importance of good health; saving of time and effort through correct habits; value of system and order in work; how to keep healthy; money value of health.

III. Practice.—1. Sewing; mending; knitting of wristlets, caps and scarfs. Crocheting squares for covers from odds and ends of worsted.

2. Woodworking and repairing; elementary book repairing and binding.

3. Home and school gardens; boys' and girls' club work; home projects and chores.

4. Buy Thrift Stamps and War Savings Stamps.

5. Salvage of waste materials in home and community.

GRADE VI.

I. Direct Instruction.—DISCUSSION TOPICS: A principle of thrift—learning how to save time, energy, money and material. Meaning of providence. Vocational guidance; opportunities in various gainful occupations. What is required to be successful in each of the fundamental occupations.

II. Correlated Study.—1. ARITHMETIC: Personal accounts; business accounts; personal budgets.

EXAMPLE.
Personal Budget

I expect to have		I expect to save		I expect to spend	
Allowance....	$0.25	Thrift Stamps	$0.50	Car fare.....	$0.10
Earnings.....	.90			Pencils.....	.08
				Candy.....	.10
				Red Cross....	.25
				Church.....	.12
	$1.15		$0.50		$0.65

2. HISTORY: Contributions of inventors to national thrift. Whitney: "One man with a cotton gin can clean a thousand pounds of cotton in place of five pounds formerly cleaned by hand." Fulton: "Steamboat reduces the cost of transportation, and marks the beginning of great expansion of internal and foreign commerce." McCormick: "Reaper

enabled one man with a team of horses to cut as much grain as twenty men swinging cradles." Howe: "Sewing machine as a result of saving in wages reduced the cost of the factory product to one-fourth that of the hand-stitched garment."

3. GEOGRAPHY: Reclamation of arid lands by irrigation and dry-farming; reclamation of swamp lands through drainage; reclamation of abandoned farms through improved methods of agriculture. Use of vacant lots for gardens. Observance of Arbor Day.

4. HYGIENE: Community health and sanitation —pure water, clean streets, and sewers necessary to community thrift. Prevention of disease carried by flies and mosquitoes. Health inspection in the schools.

5. ENGLISH: Reading of "Captains of Industry," Houghton Mifflin Co., New York. "Swiss Family Robinson," Jacobs & Co., Philadelphia. Suggestions for theme topics: How leading local merchants, doctors, lawyers, bankers and teachers make striking successes of their work; how to do one's share at home, at school, in church and in Sunday School.

6. SPECIAL: Meetings of savings societies. Attention to the value of co-operation and group action in earning and saving.

III. Practice.—1. COOKING: Plain dishes; wholesome food. Sewing on the machine; repair of clothing; repair of shoes.

2. WOODWORKING: Making useful articles; using waste materials. Repairing chairs and other furniture about the home. Making boxes and shelves.

3. GARDEN WORK: Planning and care of home and school gardens; use of products of gardens; canning of fruits and vegetables; canning clubs. Strict account of expenses and profits.

4. Buy Thrift Stamps and War Savings Stamps.

5. Christmas savings clubs of local banks. Starting building and loan accounts, Postal Savings accounts and savings bank accounts. Contributions to worthy causes.

GRADE VII.

I. Direct Instruction.—DISCUSSION TOPICS: A principle of thrift—learning how to spend wisely. Meaning of frugality. Wise spending. Habit as a great time- and labor-saving device. Education as a means of increasing income and of multiplying opportunity. Doing one's share of the world's work.

II. Correlated Study.—1. ARITHMETIC: Application of simple interest and commercial discount. Problems in percentage and interest with special reference to savings bank deposits and War Savings Stamps.

EXAMPLE.

A merchant bought a bill of goods for $828.00. A discount of 5 per cent. was given for cash payment. He invested the money saved in War Savings Stamps at $4.14 apiece. How many did he buy?

2. CIVICS: Thrift in community government. Individual responsibility for the wise expenditure of public funds. Coöperating with the local government in preventing waste and protecting city property. Laws relating to health, sanitation and garbage disposal.

3. GEOGRAPHY. Conservation of forests, mines and water-power; soil erosion. Improved methods of production, manufacturing and selling.

4. ENGLISH: Reading of "Autobiography of Benjamin Franklin," Henry Holt & Co., New York. "Wealth of the World's Waste Places and Oceania," Scribner, New York. "Modern Americans," Laurel Book Company, Boston. Collecting and reporting important facts on savings and thrift. Short compositions on savings of time, materials and money.

III. Practice—City Schools.—1. Coöperation to secure vacation and after-school work.

2. Market gardening. Club work. Boys' working reserve.

3. Cooking—nourishment value of different foods; different kinds of grades of meat and other foods. Saving the waste. Learning to buy economically.

4. Sewing, with emphasis on the economy of materials.

5. Buy Thrift Stamps and War Savings Stamps; keeping accounts with local savings institutions.

Rural Schools.—1. Individual farm enterprises

for boys; care of poultry, bees, and field crops. Profit-sharing with fathers.

2. Care of poultry, vegetables and flowers for girls. Profit-sharing with mothers.

3. Accurate account of expenses and receipts. Children's individual budgets. Family budgets.

4. Buy Thrift Stamps and War Savings Stamps. Deposit savings in post office, savings bank or building and loan association. Keep personal bank account subject to check. Contributions to worthy enterprises.

GRADE VIII.

I. Direct Instruction.—DISCUSSION TOPICS: A principle of thrift—learning how to invest money intelligently. Meaning of parsimony. American extravagance; nation's bill for luxuries; comparison with European countries. Principle of goods and services. Advantages of cash buying. Salvaging useful articles. Fire prevention.

II. Correlated Study.—1. ARITHMETIC: Commercial arithmetic, compound interest in relation to savings bank deposits. The earning power of money, insurance, preferred stock, and bonds.

EXAMPLES.

A woman cleared $200.00 selling poultry and eggs. She put the money in a bank which paid four per cent. interest, compounded annually. What did her money amount to at the end of three years?

Formula: $S = P\ (1.00 + r)^n$ where
$r =$ rate of interest
$n =$ number of years
$P =$ number of dollars of the principal
$S =$ sum at the end of n years

In 1914 a man made $500.00 over and above his living expenses. On January 1, 1915, he put this money in a savings bank at four per cent. interest, compounded semi-annually. How much did it amount to at the end of two years?

Formula: $S = P\ (1.00 + r)^n$ where
$r =$ rate of interest (the annual rate divided by two)
$n =$ number of half-year periods
$P =$ number of dollars of the principal
$S =$ sum at the end of n periods

2. CIVICS: Relation of thrift to democracy; no democracy without independence, and no independence without thrift. Thrift as an important factor in better citizenship. National and state laws as protection to life and property of the individual.

3. GEOGRAPHY: Principal products of different sections of the world; economy of producing goods in areas favored by natural conditions; improved methods of transportation as means of reducing the cost of necessities; rivers, canals, railroads and public highways.

4. ENGLISH: Reading of "How the World is Fed," American Book Co., Chicago; "Clearing the Way," World Book Co., Yonkers; "The Community and the Citizen," D. C. Heath & Co., Boston;

"First Lessons in Business," Lippincott, Philadelphia. Composition topics: "My first bargain," "Buying on the installment plan," "The man without a savings account," "The history of savings in other countries," "Best purposes for which to give money," "Best purposes for which to save money."

5. SPECIAL: Local speakers to explain the practical side of thrift in business and professional life. Specific illustrations of the different kinds of thrift.

III. Practice—City Schools.—1. Earning money after school hours and during vacation periods. Regularity of saving in definite amounts. Saving for a definite purpose.

2. Purchase of Thrift Stamps and War Savings Stamps. Keeping a savings bank account. Personal budgets for time and money. Bank account with pass-book and check-book. Contributions to worthy enterprises.

3. Shop work for boys; practice of housekeeping arts for girls. Home chores.

Rural Schools.—1. Larger farm projects for boys; corn clubs; potato clubs; marketing of produce. Budget making for the farm. Farm planning.

2. Wider domestic activities for girls; canning clubs; skill and taste in purchasing materials and in dressmaking. Keeping household budgets.

THE LIBRARY
UNIVERSITY OF CALIFORNIA
Santa Barbara

HC
1931
C5

THIS BOOK IS DUE ON THE LAST DATE
STAMPED BELOW.

MAR 21 1966

MAY 1 1967

JAN 10 '72 11 30

8

50m-5,'64(E5474s8)9482

UC SOUTHERN REGIONAL LIBRARY FACILITY
A 000 731 143 4